mechanisms; but their elaboration and discussion may be deferred until more information is available.

[1] *Amer. Nat.*, **68**, 381 (1934).

[2] This duplication is regularly eliminated somatically in certain areas. It has been discussed in this connection by Ephrussi (these PROCEEDINGS, **20**, 420 (1934)).

[3] The fourth chromosome genes referred to in this paper by symbols are: *ar*, abdomen-rotatum; *ci*, cubitus-interruptus; ci^D, dominant cubitus-interruptus; *ey*, ey^4, ey^R, recessive eyeless allelomorphs; ey^D, dominant eyeless; *gvl*, grooveless; *sv*, shaven; sv^{na}, naked.

[4] The values listed here as "probable errors" represent the probable percentage deviations from a 1:1 ratio $\left(67.45\sqrt{\frac{1}{4n}}\right)$.

ON THE OCCURRENCE OF AN OREODONT SKELETON IN THE SESPE OF SOUTH MOUNTAIN, CALIFORNIA

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In a previous paper[1] I have noted the occurrence of two distinct types of oreodonts, namely, a leptauchenid and a species tentatively referred to the genus *Promerycochœrus*, in the Sespe deposits as exposed on the flank of South Mountain, Ventura County, California. A third type of oreodont, the genus *Eporeodon*, is now recorded from this upper division of these continental beds.

Location of the Sespe deposits of South Mountain, with reference to the important horizons of the Sespe of the Simi Valley and Las Posas Hills regions, discussed in previous papers published in the PROCEEDINGS, is shown in figure 1. I am privileged to reproduce, through courtesy of the geological staff, Shell Company of California, the columnar section, figure 2, giving the Tertiary stratigraphic sequence at South Mountain. As will be noted in this section, the thick series of Sespe deposits grades upward without stratigraphic break into the marine Vaqueros (Lower Miocene).

The leptauchenids occur lower in the section than the level where *Promerycochœrus? hesperus* was found, and range through a stratigraphic thickness of approximately 1000 feet. The position of *Eporeodon* is shown at Locality 157 Calif. Inst. Tech. Vert. Pale., and lies within the vertical range of the leptauchenids. The occurrence is approximately 1500 feet lower stratigraphically than that of *P.? hesperus*. The skeleton was found in a dominantly maroon-colored shale and siltstone which

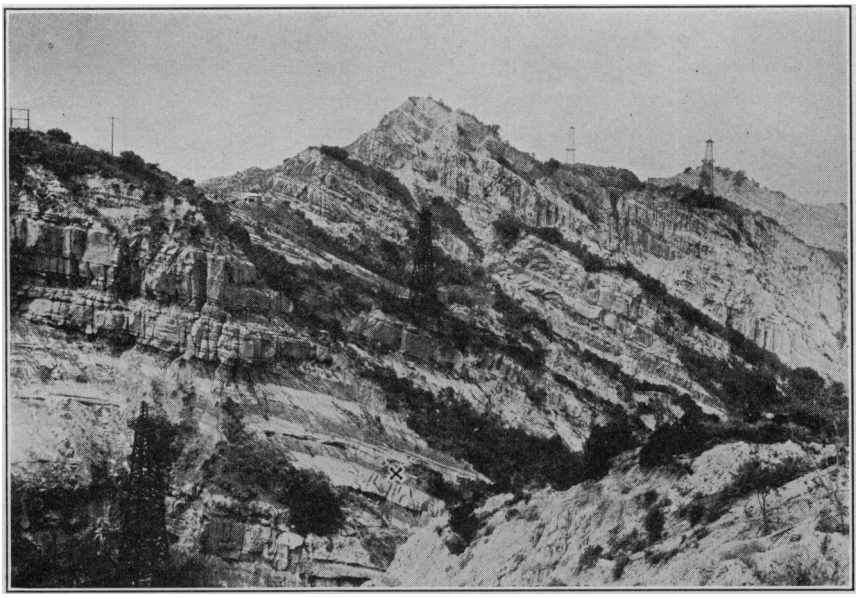

Figure A. View looking northwest across Willard Canyon showing portion of north limb of South Mountain anticline and position of oreodont skeleton at Locality 157 C.I.T. Vert. Pale. (X) in the Sespe deposits. South Mountain, Ventura County, California.

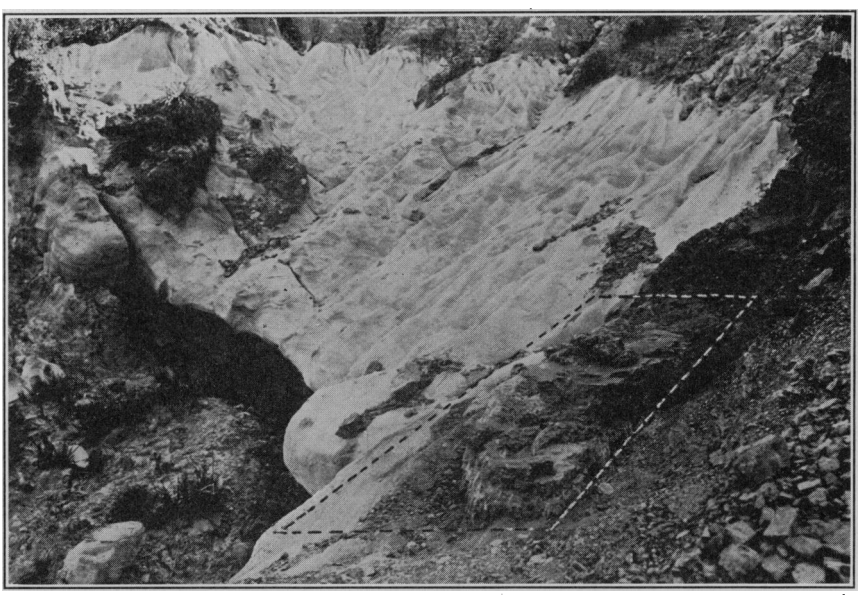

Figure B. Close-up view of Locality 157. Position of maroon-colored shale and siltstone containing oreodont skeleton shown within parallelogram.

overlay at this locality a stratum of white, cross-bedded sands (see Plate 1, Fig. B). No other vertebrate remains were encountered at this locality.

The specimen (No. 1566 Calif. Inst. Tech. Coll.) had evidently suffered somewhat from exposure prior to burial and is consequently not completely preserved. Plate 2 shows the skeleton in its original position as freed from the rock mass and prepared by H. Anson Wylde. Although the skull lacks the greater portion of the cranium (shown restored in figure), it still retains, fortunately, the tympanic bulla as well as the posterior premolar and molar teeth of the right side. These have been exposed on the reverse side of the plaque.

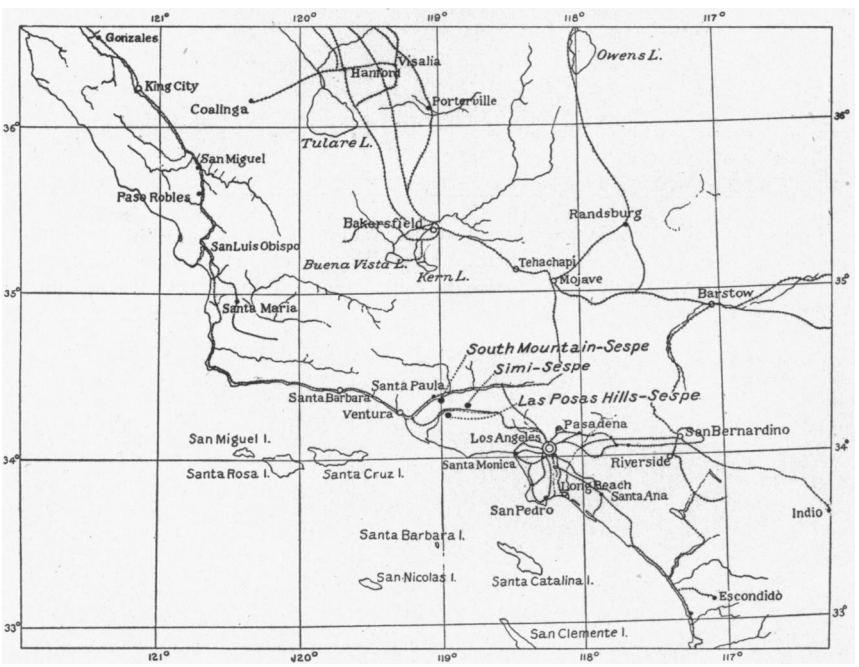

FIGURE 1

Index map showing location of three principal vertebrate fossil occurrences in the Sespe deposits of Ventura County, California.

In presence of the large bulla and in the characters displayed by the premolar teeth, the Sespe form is more like *Eporeodon* than like *Merycoidodon*. The skeleton is of an individual resembling *Eporeodon socialis* in size. In this character it appears to differ from average specimens of *Eporeodon* from the John Day. An antorbital pit was present. The vertebrae of the neck and back are weathered somewhat, but the number of segments comprising the thoracic-lumbar series appears to be 19 or 20.

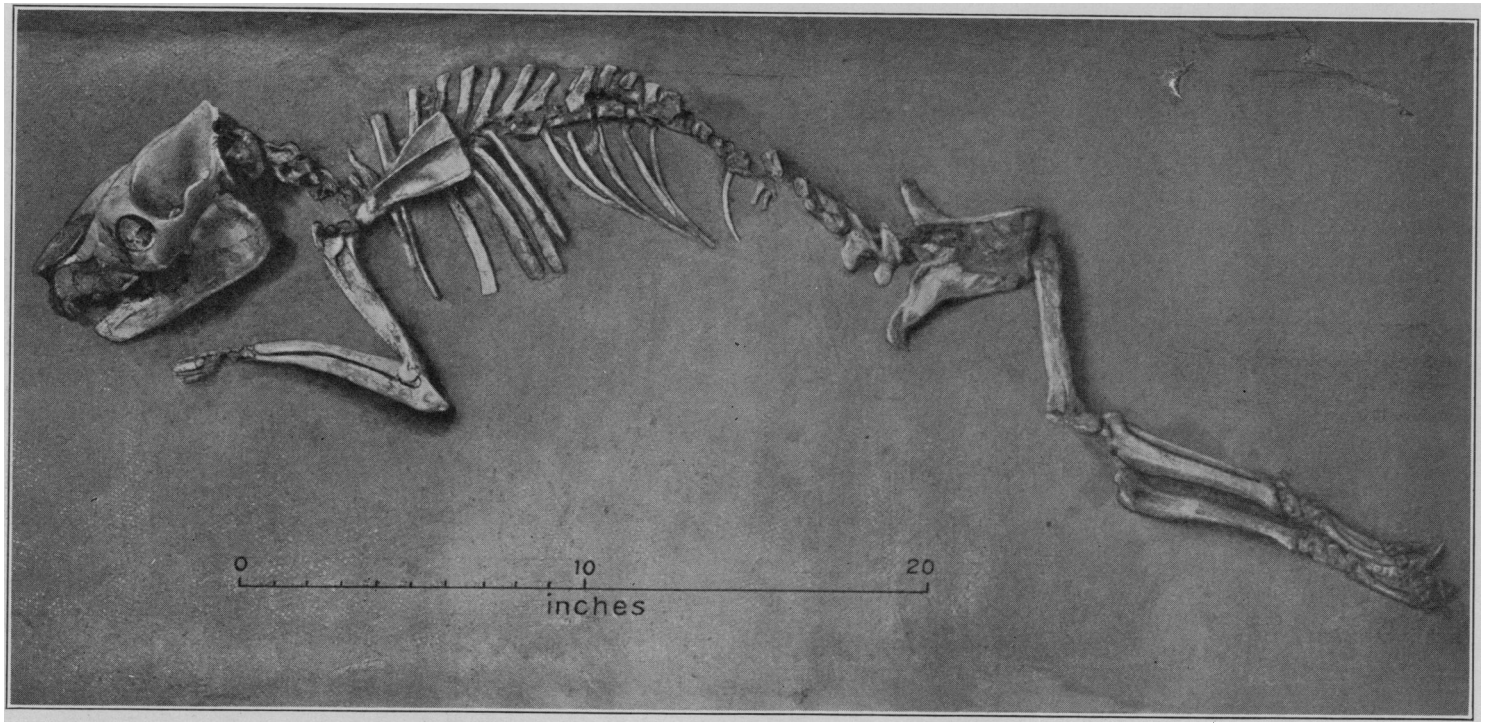

PLATE 2

Eporeodon thurstoni, n. sp.

Skeleton (type specimen, No. 1566 C.I.T. Vert. Pale. Coll.) in original position as freed from rock mass and prepared by H. Anson Wylde. Sespe Upper Oligocene. South Mountain, Ventura County, California.

Thorpe[2] records 13 dorsal and 6 lumbar segments in the vertebral formula for *Eporeodon*. The tail is not preserved in the Sespe specimen. The right pes in No. 1566 shows a rudimentary element in articulation with the navicular and situated above the proximal end of metatarsal II. This may represent a fused entocuneiform and rudimentary metatarsal I. Its postero-distal end is rounded.

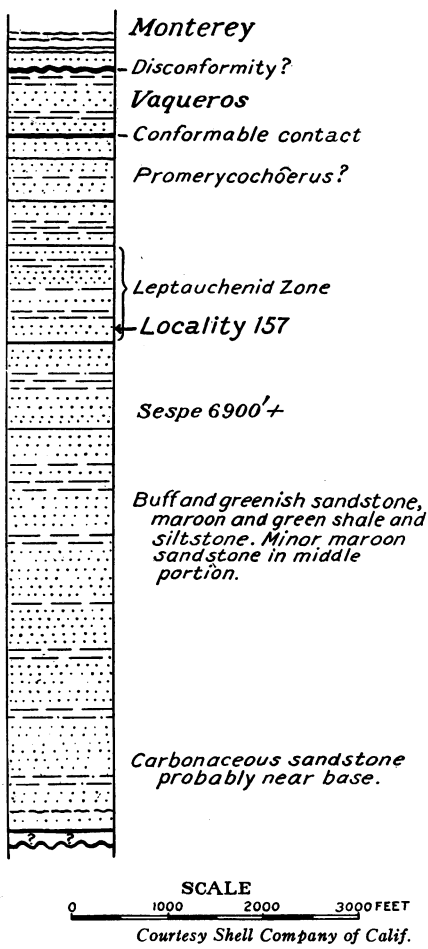

FIGURE 2

Columnar section of Tertiary beds occurring at South Mountain, Ventura County, California. Note position of oreodont skeleton (Locality 157) with reference to occurrences of previously described oreodonts from the Sespe deposits.

In view of the numerous species of *Eporeodon* recorded from the White River and John Day, our type from the Sespe may be found ultimately to represent one of these described forms. It seems desirable, for the present at least, to recognize on the basis of the limited characters noted above the type from the Sespe as a new species, for which the name *Eporeodon thurstoni* n. sp. is here proposed. The species is named for the late James E. Thurston in appreciation of his valuable services in the conduct of the Sespe explorations.

Loomis[3] regards the geologic range of *Eporeodon* as extending from Middle Oligocene to Lower Miocene, the genus occurring in the middle White River, John Day and Lower Rosebud. In western North America, *Eporeodon* is well represented in the middle John Day, and is not absent in the upper John Day. However, *Promerycochœrus* is the more common type to be found in the latter faunal horizon. The leptauchenids remain wholly unrecorded from the John Day.

Evidence afforded by the stratigraphic position and by the morphologic

characters of *E. thurstoni* does not mitigate against the view that the Sespe deposits at Locality 157 on the flank of South Mountain are upper Oligocene in age. It seems probable that the beds included in at least the lower range of the leptauchenids are as old as, or older than, middle John Day. The age relationship between the Sespe at Locality 157 and the John Day may be broadly comparable to that which exists between the Las Posas Hills Sespe (Kew Quarry fauna) and the John Day.

[1] Stock, C., *Carnegie Inst. Wash.*, Publ. **404**, art. 3 (1930).
[2] Thorpe, M. R., *Peabody Mus. Nat. Hist.*, Bull. **2**, 21 (1931).
[3] Loomis, F. B., *Bull. Amer. Mus. Nat. Hist.*, **51**, art. 1 (1924).

ON A THEOREM OF CARLEMAN

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In a paper of Wiener and Paley,[1] the following theorem is proved:

A necessary and sufficient condition that a class of functions C'_A, determined by $\int_{-\infty}^{\infty} f^{(v)}(X) \mid^2 dX \leq B^{2v}A^2_v$, be quasi-analytic is that

$$\int_0^\infty \frac{dX}{1+X^2} \log \sum_{v=0}^{\infty} \frac{X^{2v}}{A^2_v} \text{ diverge.}$$

From this theorem, it is possible to prove the fundamental theorem of Carleman[2] concerning quasi-analytic classes over the finite interval. Carleman's theorem states that the functions belonging to C_A, that is, for which $|f^{(v)}(X)| \leq B^v A_v$ over the interval (0, 1), form a quasi-analytic class if and only if

$$\int_0^\infty \frac{dX}{1+X^2} \log \sum_{v=0}^{\infty} \frac{X^{2v}}{A^2_v} = \infty. \tag{1}$$

To show that divergence is necessary, we proceed as follows. Let $F_0 = 1$, $F_v = A_{v-1}$. Note that if the integral (1) converges for the sequence A_v, it does so for the sequence F_v. From the Wiener-Paley theorem given above, we can construct a function $f(x)$ such that $\int_{-\infty}^{\infty} |f^{(v)}(X)|^2 dX \leq F_v^2$ and such that $f(X)$ vanishes with all its derivatives at some point which may be taken as $x = 0$. Moreover, since

$$|f^{(v)}(X)| = \left|\int_0^x f^{(v+1)}(X)\, dx\right| \leq \left[\int_0^1 |f^{(v+1)}(X)|^2 dx\right]^{1/2} \leq F_{v+1} = A_v \quad (0 \leq X \leq 1),$$