

# A NEW MOUNTAIN GOAT FROM THE QUATERNARY OF SMITH CREEK CAVE, NEVADA

By CHESTER STOCK

M. R. Harrington<sup>1</sup> has called attention to the occurrence of a large limestone cave in the canyon wall of Smith Creek, approximately 34 miles north of Baker, White Pine County, Nevada. Preliminary excavations by the Southwest Museum brought to light considerable material representing a Quaternary assemblage of mammals and birds<sup>2</sup> preserved in the cave deposits. The relationship of the fauna to a possible occupancy of the cavern by Man and the intrinsic interest which this assemblage possesses as coming from a site with elevation of approximately 6,200 feet, adjacent to the Bonneville basin of Utah, made a further investigation desirable. This was undertaken with the support of the Carnegie Institution of Washington during the past summer.

One of the mammals whose remains are found in the Smith Creek Cave deposits is a mountain goat. While the genus *Oreamnos* occurs in the Pleistocene of North America, no species distinct from that of the living type has been recorded. In the present instance, however, the animal is clearly separable specifically from *Oreamnos americanus*.

## Family BOVIDAE

### OREAMNOS HARRINGTONI n. sp.

Type specimen: Parts of frontals and two horn-cores, No. 2028, Calif. Inst. Tech. Coll. Vert. Pale., plate 35, figure 2.

Paratypes: Front cannon bone, No. 2030, and hind cannon bone, No. 2029, plate 35, figures 5 and 3.

Locality: Smith Creek Cave, Snake Range, approximately 34 miles north of Baker, White Pine County, Nevada; Calif. Inst. Tech. Loc. 251.

Specific characters: Approximately two-thirds the size (linear) of *Oreamnos americanus*. Horn-core extends farther at tip end and possesses greater backward curvature than in *O. americanus*. Anterior cannon bone with better developed knob for tendon attachment on anterior face of Metacarpal III adjacent to proximal border. Posterior cannon bone with shaft narrower in lower half than in Recent species and with median groove of anterior face deeper. This species is named for Mr. M. R. Harrington in recognition of his noteworthy contributions to the study of cave occurrences in the Southwest.

Description: Probably no less than six individuals are rep-

<sup>1</sup> M. R. Harrington, Masterkey, vol. 8, pp. 165-169, 1934.

<sup>2</sup> Study of the bird remains is now in progress and the description of a new species of extinct eagle has been published by Hildegard Howard in The Condor, vol. 37, pp. 206-209, fig. 40, 1935.



resented in the collections thus far acquired from the deposits in Smith Creek Cave. All of the material occurs in a dry dust or earth within three or four feet of the surface of the cave. *Oreamnos harringtoni* is clearly a smaller type than the living mountain goat, *O. americanus*. It differs likewise in character of size from the specimen recorded by Sinclair<sup>3</sup> from Potter Creek Cave in Shasta County, California. Unfortunately, no skull of the extinct species is available, but the horn-cores furnish evidence of the difference between this type and the modern species. When the profile of the frontal bone in front of the horn-core is so placed as to correspond to the profile in *O. americanus*, the horn-core in the extinct species is seen to be less erect than in the former. It is also extended more at the free end. Thus the horn-core possesses over its length a greater curvature than is the case in the living form.

The illustrations of the metapodials from Smith Creek Cave indicate the known variation in size in these elements in *O. harringtoni*. The front metapodial corresponds more closely in shape to that in *O. americanus* than is the case when the hind cannon bones of the extinct and living species are compared. As viewed from the proximal end, plate 35, figures 5 and 6, the knob for tendon attachment, situated on the anterior face and at the upper end of metacarpal III, stands in bolder relief in the fossil than in the living species. The nutrient foramina appear to have a variable development for in No. 2030, plate 35, figure 5, not only is the lower one present but a second occurs on the median line approximately at the middle of the shaft. This foramen is absent in No. 2032.

The shaft of the hind cannon bone does not widen so noticeably in its lower half as in the Recent species and possesses in this regard a little of the appearance of the element in *Capra*. The median longitudinal groove on the front face of the shaft appears to be a trifle deeper than in the Recent species of *Oreamnos*. The cannon bone illustrated in plate 35, figure 4, lacks the lower nutrient foramen and shows in the lower half of the shaft an elongate depression on the posterior face which is absent in No. 2029.

Remarks: The finding of remains of *Oreamnos harringtoni* at Smith Creek Cave is perhaps not surprising in view of the elevation of the Snake Range in which the cavern is located. Mountain goats are rarely encountered in Pleistocene deposits of North America and the occurrence in eastern Nevada is the most southerly of the four localities recorded from the region south of the present range of *Oreamnos* (Plate 34). It is evident that, as in the case of other bovid groups, the area of distribution of mountain goats in western North America has shrunk since the period of its optimum size, sometime during the Pleistocene. One may wonder whether the differences that separate

<sup>3</sup> W. J. Sinclair, Univ. Calif. Publ. Bull. Dept. Geol., vol. 4, pp. 152-153, pl. 20, figs. 3 and 4, 1905.



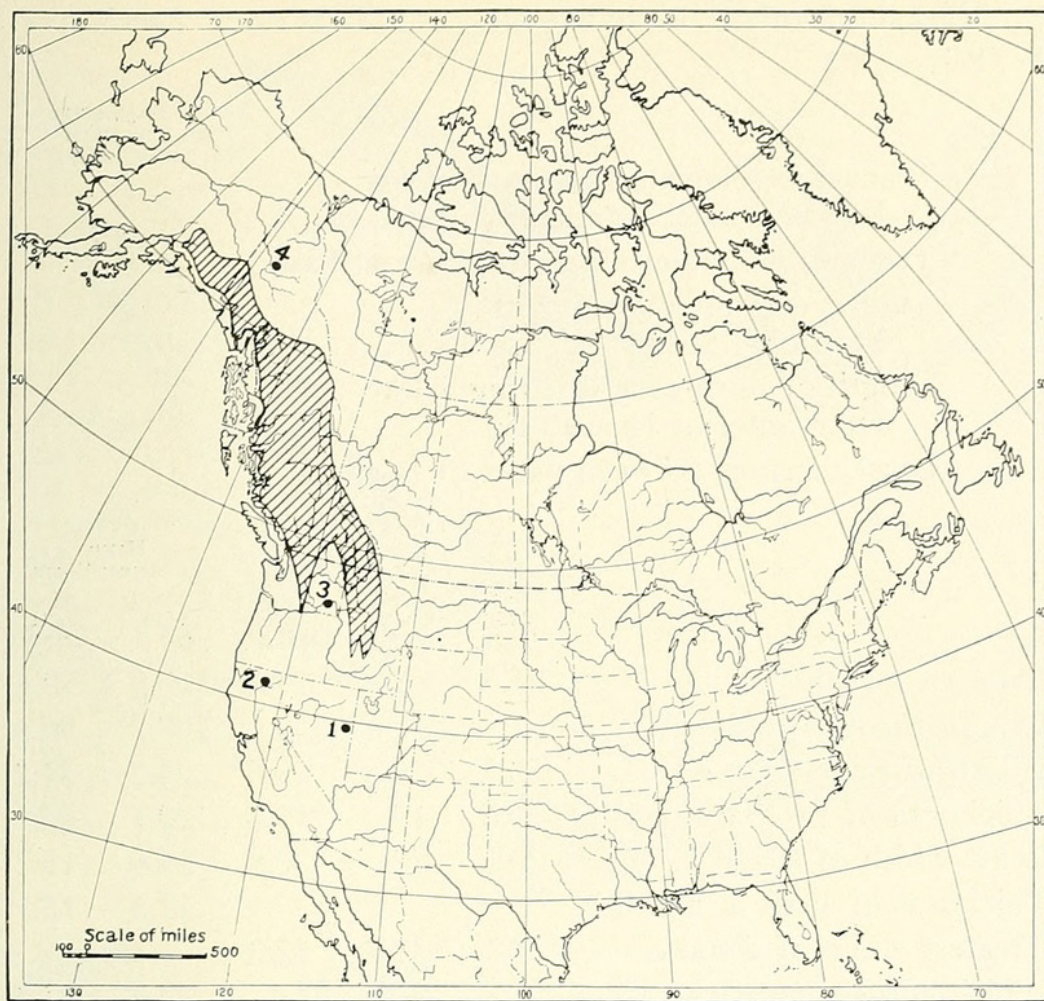


PLATE 34

Map showing Quaternary occurrences of mountain goats (1, Smith Creek Cave, Nevada; 2, Potter Creek Cave and Samwel Cave, California; 3, Washtucna Lake, Washington; Klondike, Canada.) Area shown with oblique lines indicates Recent range of *Oreamnos*, after Ernest Thompson Seton, *Lives of Game Animals* published by Doubleday, Page & Co.

*Oreamnos harringtoni* from the living species are due to an isolation of the former species on the Snake Range. Associated with *O. harringtoni* in the fauna from the deposits of Smith Creek Cave are the genera *Equus*, *Camelops* and *Ovis* among the larger herbivores. While the age of the assemblage is presumably late Quaternary, the question of position of this stage in the Quaternary succession may be answered assertively only when the occurrence and entire fauna are studied in detail.



Measurements (in millimeters) of *Oreamnos harringtoni*  
n. sp.:

	SKULL FRAGMENT TYPE SPECIMEN No. 2028 C. I. T.
Transverse diameter across frontals between outer bases of horn-cores .....	67.2
Transverse diameter of horn-core at base....	26.8
Anteroposterior diameter of horn-core at base .....	30
Length of horn-core in straight line from anterior base to tip .....	89.8
Least distance between bases of horn-cores..	17

	FRONT CANNON BONE			HIND CANNON BONE	
	No. 2030 C.I.T.	No. 2032 C.I.T.	No. 2033 C.I.T.	No. 2029 C.I.T.	No. 2031 C.I.T.
Greatest length .....	81.5	91	91	110.8	99.5
Length through middle .....				108.2	96.5
Width of proximal end.....	28.5	28	29.6	24.2	24.2
Thickness of proximal end ..	19.6	19	19.8	20.1	20.6
Least width of shaft .....	20.5	20	*20.8	14.6	15.2
Thickness of shaft at middle..				12.3	13.5
Greatest width of distal end ..	32.1	32.8	32.3		
Width across condyles .....		32	33	29.3	27.7
Thickness of condyles .....		17.5	20	17.9	16.7

\* Approximate.

Postscript: While this paper has been in press, remains of mountain goats with characters of *Oreamnos harringtoni* have been uncovered by the National Park Service in quaternary deposits of Rampart Cave, lower Grand Canyon, Arizona.

PLATE 35 (opposite page)

*Oreamnos americanus* (Blainville)

Figure 1. Skull, lateral view, x  $\frac{1}{3}$ . Recent, Canada.

*Oreamnos harringtoni* n. sp.

Figure 2. Type specimen, parts of frontals with horn-cores, No. 2028, lateral and anterior views, x  $\frac{2}{3}$ .

Figures 3 and 5. Paratypes, posterior cannon bone, No. 2029; anterior cannon bone, No. 2030; anterior and proximal views; x  $\frac{2}{3}$ .

Figures 4 and 6. Topotypes, posterior and anterior cannon bones, Nos. 2031, 2032, anterior and proximal views; x  $\frac{2}{3}$ .

Quaternary, Smith Creek Cave, Nevada. Calif. Inst. Tech. Coll.



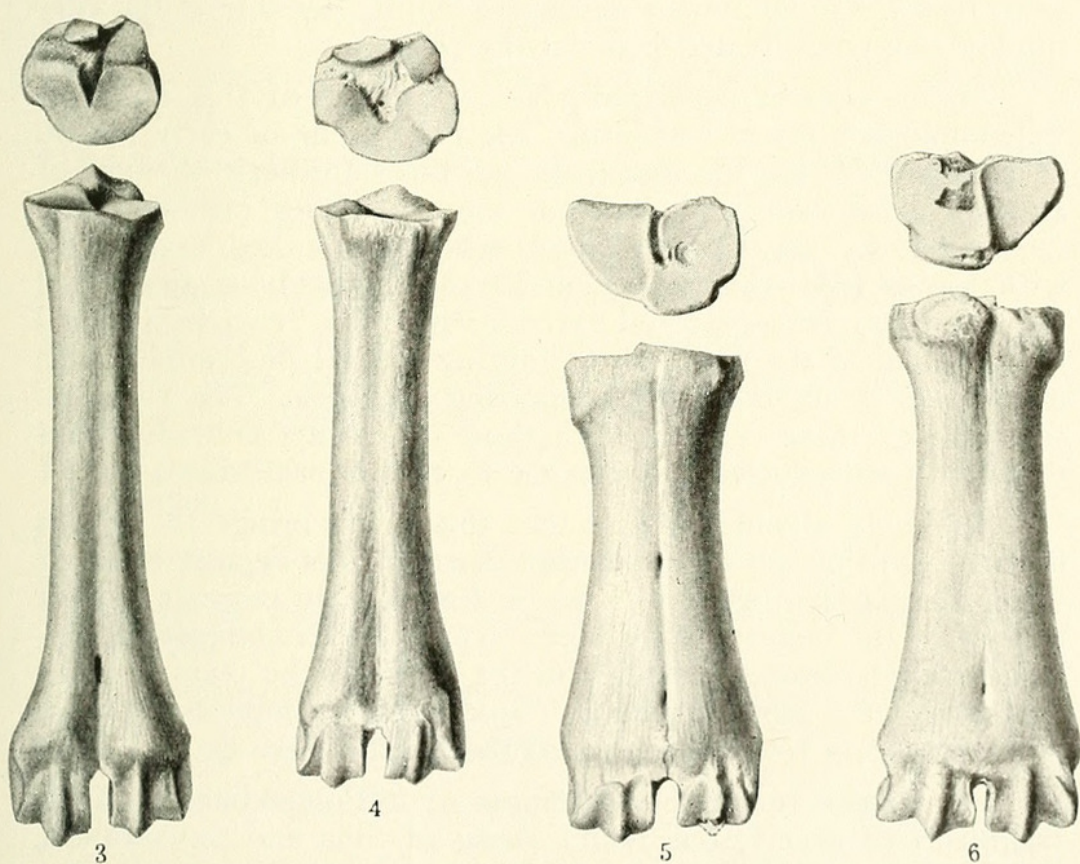
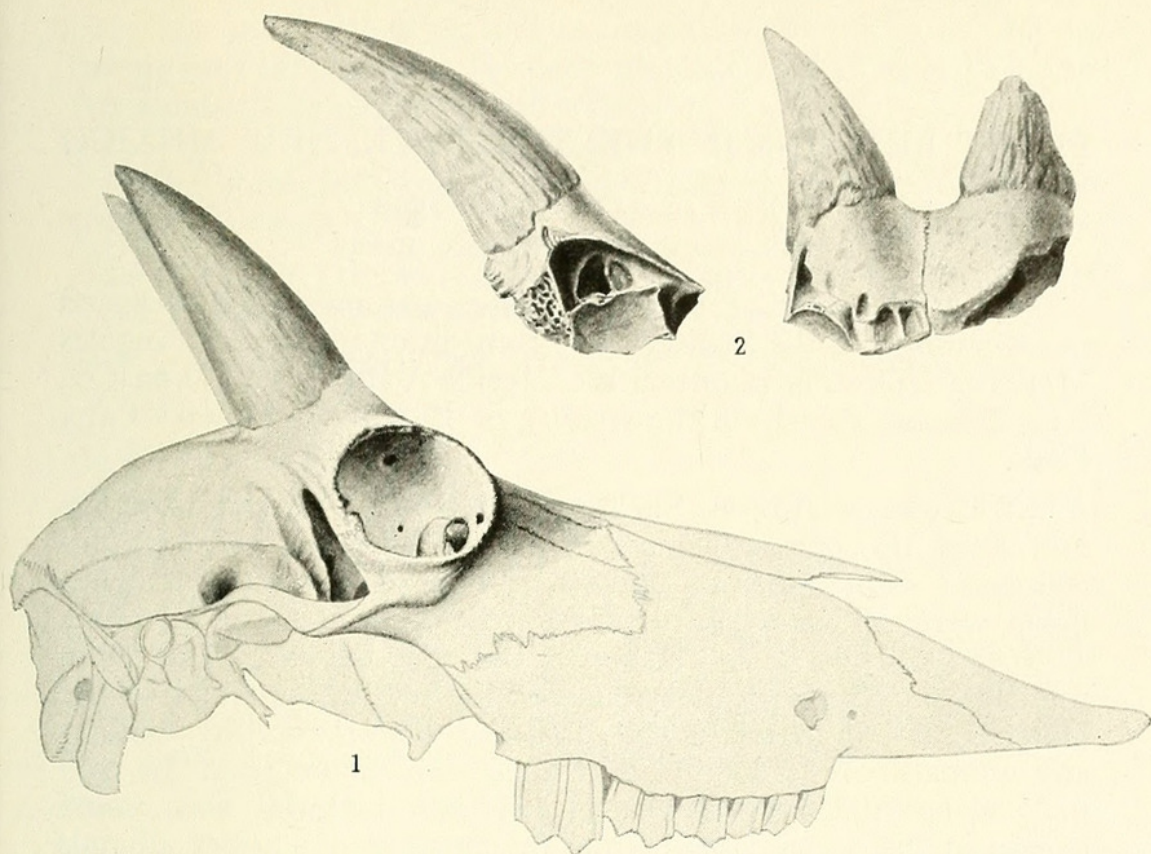


PLATE 35



1936. "A new Mountain Goat from the Quaternary of Smith Creek cave, Nevada." *Bulletin of the Southern California Academy of Sciences* 35, 149–153.

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