

# PALEONTOLOGY AND STRATIGRAPHY OF SOME MARINE PLEISTOCENE DEPOSITS IN NORTHWEST LOS ANGELES BASIN, CALIFORNIA<sup>1</sup>

PETER U. RODDA<sup>2</sup>  
Los Angeles, California

## ABSTRACT

Recent excavations made in the Cheviot Hills, Los Angeles County, California, have exposed fossiliferous marine Pleistocene strata. Two new formations occur in this area. The lower Pleistocene Anchor silt consists of 60 feet of soft buff silts, and is unconformably overlain by the upper Pleistocene Medill sand, consisting of 60 feet of grayish, loosely consolidated sand and gravel.

Eighty-three species of fossils, mostly mollusks, are identified from five localities in the Anchor silt, and 21 species of mollusks are identified from a single locality in the Medill sand. The fauna of the Anchor silt probably lived offshore at a depth of 25-35 fathoms on a silty or muddy bottom, and in water considerably colder than that present today at this latitude and depth. The fauna of the Medill sand represents a warm bay habitat.

The Anchor silt is faunally and lithologically similar to parts of the San Pedro and Timms Point formations at San Pedro, to small exposures of lower Pleistocene in the Pacific Palisades area, and to unnamed lower Pleistocene units in the Baldwin Hills.

The Cheviot Hills are along the Newport-Inglewood uplift, 1½ miles southwest of the Beverly Hills oil field.

## INTRODUCTION

Recent excavations made in connection with real estate development near Castle Heights Avenue in the Cheviot Hills, Los Angeles, have exposed fossiliferous marine Pleistocene strata. The fauna is chiefly molluscan, and it is the purpose of this paper to describe the stratigraphy and paleontology of the Castle Heights area with emphasis on the molluscan paleontology. The work on which this report is based was done during parts of 1954 and 1955.

## LOCATION

Pleistocene deposits of the Castle Heights area are exposed in east-facing artificial cuts above an unnamed watercourse, one mile southeast of Twentieth Century Fox Studios (Figs. 1 and 2). The exposures are bounded by the watercourse on the east, McConnel Drive on the west, Monte Mar Place on the north, and Club Drive on the south. As the real estate development of the area proceeds, strata temporarily exposed in homesite cuts are rapidly being covered by houses and landscaping. At present some of the fossil localities are inaccessible.

This report also includes the description of a small exposure of fossiliferous marine Pleistocene near the hilltop on Overland Avenue, about 1,000 feet south

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<sup>2</sup> Department of Geology, University of California, Los Angeles. The writer acknowledges the generous assistance of Professors U. S. Grant, IV, and W. P. Popenoe, of the University of California, Los Angeles. Thanks are due James W. Valentine, graduate student at the University of California, Los Angeles, who has aided in many ways. John T. McGill of the United States Geological Survey has generously given of his time for the reading of the manuscript and for helpful suggestions in the field. The maps and cross section were drafted by Mrs. Opal Kurtz, University of California, Los Angeles.

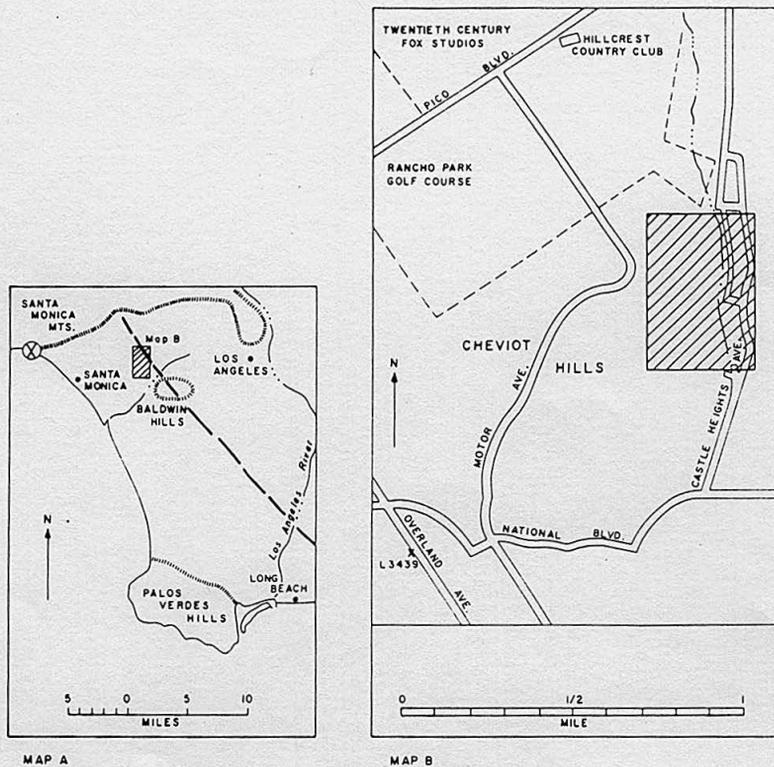


FIG. 1.—Index maps showing western Los Angeles basin and location of Castle Heights area. In Map A, heavy dashed line is trace of Newport-Inglewood fault zone, and X indicates location of lower Pleistocene localities of Hoots (1931). In Map B, shaded rectangle is Castle Heights area, shown in detail on geologic map (Fig. 3).

of National Boulevard, and one mile southwest of the Castle Heights area (Figs. 1 and 2).

#### PREVIOUS WORK

Published geologic maps that incorporate the Castle Heights area include those by Eldridge and Arnold (1907, Pl. 18), Hoots (1931, Pl. 16), Hoots and Kew (1932, Pl. 6), Woodford *et al.* (1954, Pl. 1), and Woodring (1938, Pl. 2). The areas discussed in this paper have previously been mapped as marine upper Pleistocene. The work of Hoots is the most detailed.

The only previous report of Pleistocene fossils from the Cheviot Hills is the Overland Avenue locality of Hoots (1931, p. 122 and Pl. 16), which contained a very small fauna and was assigned to the upper Pleistocene. A locality probably identical with this was collected by the writer and is discussed.



FIG. 2.—Air view northward from Baldwin Hills across Culver City to Santa Monica Mountains and beyond. Rectangle crosses Castle Heights area; recent homesite cuts exposing fossiliferous strata have been made in bare east-facing bluffs. X is Overland Avenue locality (L. 3439). Photograph by Spence Air Photos, August 6, 1951.

#### STRATIGRAPHY

*General.*—The strata exposed in the Castle Heights area are composed of soft silts, sands, and gravels, and are divided into two superposed formations. Significant exposures are confined to the recently made cuts between Anchor Avenue and McConnell Drive. Total thickness of the exposed section is about 120 feet, and the beds are nearly horizontal, with  $7^{\circ}$  the highest recorded dip. However, some local contorted bedding was noted at a few localities in the Anchor silt (Fig. 7).

The Castle Heights area lies along the axis of the Newport-Inglewood uplift,  $1\frac{1}{2}$  miles southwest of the Beverly Hills oil field.

*Anchor sill.*—This unit, the older of the two formations, is named from exposures along Anchor Avenue. Its maximum thickness is 60 feet, and consists largely of massive, buff-colored, fine sands and silts with thin, irregular beds of cobble gravel. This unit is well developed north of Beverlywood Street in the cuts between Anchor Avenue and Krim Drive, and at the northwest corner of Beverlywood Street and Krim Drive.

The base of the formation is not exposed. The stratigraphically lowest exposures crop out at the northern end of Anchor Avenue, and consist of 5 feet of gravelly sand containing abundant well rounded pebbles and cobbles of white siliceous shale 2–3 inches in diameter (Fig. 6).

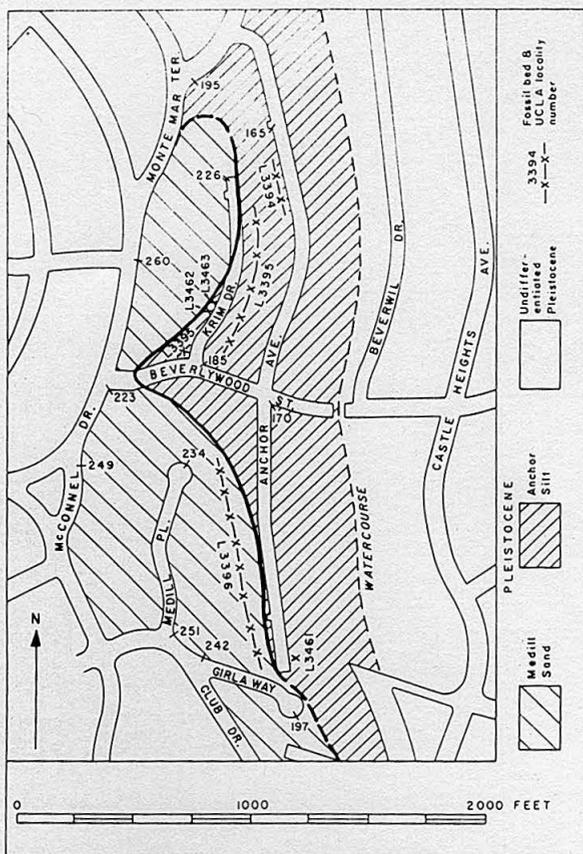


FIG. 3.—Geologic map of Castle Heights area. Figures at street corners give curb elevations to nearest foot. Street base and curb elevations from Los Angeles City Engineering Bureau, 1955. Line of cross section of Figure 4 is approximately coincident with trace of fossil bed L 3396.

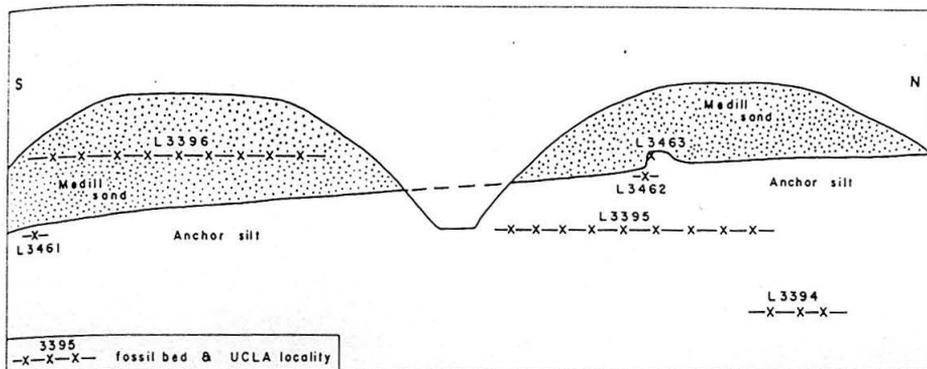


FIG. 4.—Schematic cross section showing relations of Anchor silt and Medill sand. L 3463 is "stack." Not to scale.

The lowest fossil bed is superjacent to this gravel, and is exposed for 150 feet along Anchor Avenue (Fig. 3). This bed is 3 feet thick, and the fossils are in a matrix of buff, sandy silt.

Twenty feet of non-fossiliferous silt and gravelly sand separate the lower and upper fossil beds in the Anchor silt. This second gravelly sand, which is confined to the upper 4 feet, is similar in composition to the lower gravel. The overlying fossil bed has a matrix of sandy silt, is 2 feet thick, and is exposed for a distance of 500 feet, from Beverlywood Street to a point nearly opposite the north end of Krim Drive (Fig. 5). It also crops out at the northwest corner of Beverlywood Street and Krim Drive (Figs. 7 and 8). The sandy silt above and below the fossil bed is concretionary and hard.

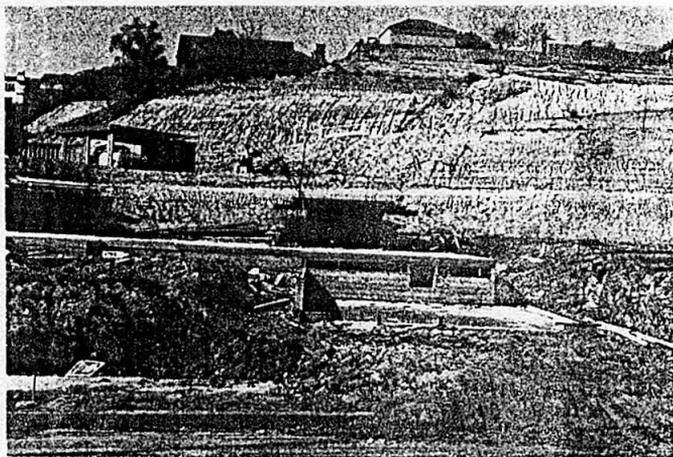


FIG. 5.—Looking west from Anchor Avenue, 200 feet north of Beverlywood Street. Thin white band above piles of lumber on house foundation is upper fossil bed (L 3395) in Anchor silt.

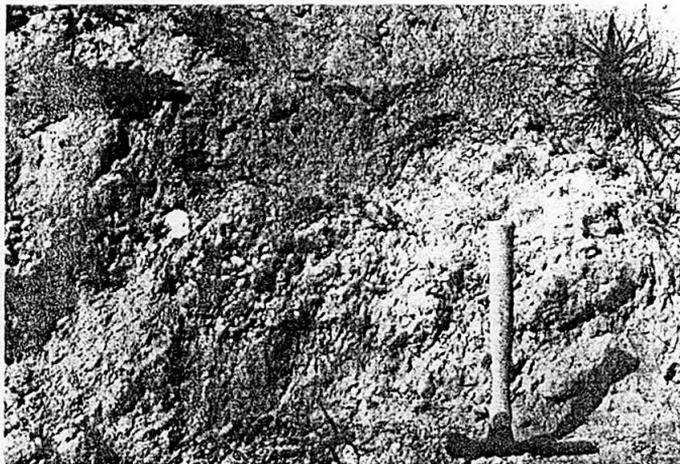


FIG. 6.—Close-up of lower part of Anchor silt showing gravelly character. Photograph taken along west side of Anchor Avenue, 400 feet south of Monte Mar Place. Length of hammer, 12 inches. Small white patches in upper part of photograph are fossils in lower fossil bed (L. 3304).

The upper 25 feet of the Anchor silt are composed of fine sand and silt, sparingly fossiliferous and irregularly concretionary.

The Anchor silt is in disconformable contact with the overlying Medill sand. Cut-and-fill structures are present at the top of the Anchor silt, and the contact is characterized by a rather abrupt increase in grain size from the Anchor silt to

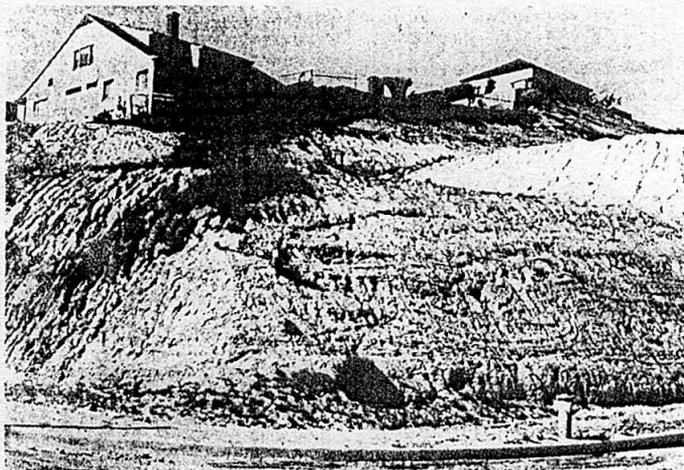


FIG. 7.—Northwest corner of Krim Drive and Beverlywood Street looking northwest. Contact of Anchor silt and Medill sand is few feet above bench cut on lot in foreground. Contorted bedding shows above fireplug.

the Medill sand. The contact between the two formations, though locally irregular, has a rather even slope of less than  $2^{\circ}$ S. The contact is at an elevation of about 225 feet along the northern part of Krim Drive, and is at about 195 feet at the southern end of Anchor Avenue (Figs. 3 and 4).

*Medill sand.*—This formation, named from exposures along, and adjacent to, Medill Place, is a mixture of fine to coarse sand and gravel. It has a maximum thickness of near 60 feet in the Castle Heights area, and is well exposed north and south of Beverlywood Street.

The base of the Medill formation is a coarse sand and, or, gravel. The irregular pockets of gravel consist of well rounded metamorphic and granitic cobbles

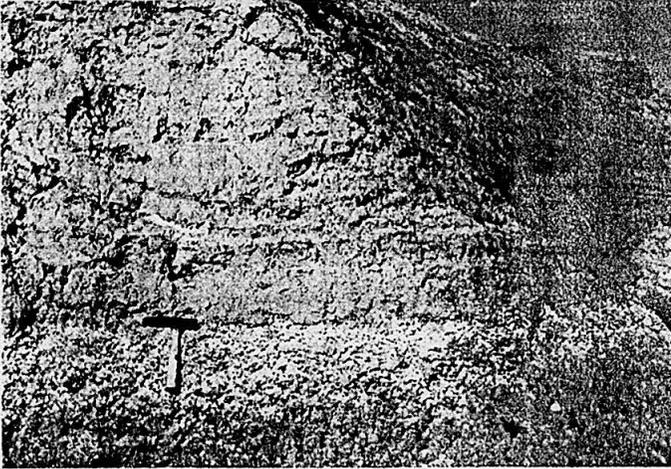


FIG. 8. Northwest corner of Krim Drive and Beverlywood Street looking north. Fossil bed (L 3395), 2 feet thick.

and boulders up to 15 inches in diameter. White siliceous shale fragments, so common in the gravelly sections of the Anchor silt, are not present in the Medill gravels. These Medill gravels have a fine to coarse, gray-brown, sandy matrix, and have a maximum thickness of about 10 feet, though the thickness and lateral extent vary greatly from place to place.

The rest of the section consists of irregularly mixed and interbedded fine to coarse, gray to brown sand, and a small amount of cobble gravel. The single fossil bed in the Medill sand is in coarse grayish sand at an elevation of about 220 feet, and is exposed along the east-facing cuts for a distance of 500 feet, from Giralda Way north toward Beverlywood Street (Figs. 11 and 12). The sands below and including the fossil bed are generally grayish, and contrast markedly with the overlying brown sands. The cause of this color difference is not known. The present soil is developed on these brownish sands.