

## Pleistocene Chipped Stone Tool on Santa Rosa Island, California

*Abstract. Santa Rosa Island, California, has been the site of numerous discoveries of evidence of Pleistocene Man. The recent finding of a well-made chipped stone tool in situ in the mammoth beds adds further evidence.*

Since 1946 (1), excavations and studies have been made of the Santa Rosa Island formation which contains the charred bones of dwarf mammoths and birds as well as more than 100 "fire areas" suggesting "barbecue pits."

Human bone, found at a depth of 11 m at Arlington Springs, has been dated by Broecker (2) as 10,400 years old. It was analyzed for fluorine by Oakley, who reported the bones as fossil (3). In a narrow area of about 1000 m along the sea cliffs, more than 40 radiocarbon dates have been secured from five laboratories. These dates spread through the entire range of radiocarbon.

In September 1963, while searching for radiocarbon material, Gordon Fergusson, Rainer Berger (4), and I discovered a well-made chipped stone implement 145 mm by 103 mm, projecting about 45 mm from the compact clays of the Tecolote member of the Santa Rosa Island formation (5), and at a depth of approximately 2½ m below the grass roots.

The implement was in a small badland type of gully, and lay stratigraphically between two separate mammoth deposits. The upper one, consisting of a few weathered bones, has been known to be in evidence for 17 years, the lower bones constituted quarry No. 2, and contained the partial burned skele-

tal parts of a young mammoth which I excavated in 1946. On the opposite side of the erosional channel are several fire areas in which erratic chips, which may be discards of tool making, or, in some cases, thermal fractures, occur in considerable numbers.

This tool is made from a beach cobble naturally rounded on all sides except where it is bifacially chipped by percussion. The upper side (as it lay in the ground) has six distinct chips, the lower side has one large chip and two smaller ones. There is evidence of some retouching.

Numerous chipped-stone implements have been found on the surface, some in association with weathered mammoth bones. Other chipped stones have been found with buried mammoth bones, but are controversial as to whether they were "thermal fractures" or man-made. There is no doubt that this last find is man-made, and *in situ* in the mammoth beds.

While no radiocarbon age can as yet be assigned to this particular specimen, it lies stratigraphically about 120 m east of Lamont's L. 290-T, 12,500 years old, made on charcoal from a mammoth "kill," and at an equal distance west of sample UCLA 141, made from carbon in an Indian midden and dated as 12,620 years ago. From about 90 m away and slightly higher stratigraphically, charcoal from a buried midden was dated at 11,900 years ago (sample UCLA 661).

Further dating and excavation will be carried out in the future, and this and other artifacts will be described elsewhere.

PHIL C. ORR

*Santa Barbara Museum of Natural History, Santa Barbara, California*

### References and Notes

1. Conducted by the Santa Barbara Museum of Natural History and the Western Speleological Institute, Inc.
2. P. C. Orr, *Science* 135, 219 (1962).
3. K. P. Oakley, *ibid.* 141, 1172 (1963).
4. Of the Institute of Geophysics and Planetary Physics, University of California, Los Angeles.
5. P. C. Orr, *Bull. Geol. Soc. Am.* 61, 1113 (1960).
6. Contribution of the Western Speleological Institute, No. 20.

15 November 1963



Fig. 1. Pleistocene chipped Stone tool found at Santa Rosa Island.