

A PRELIMINARY REPORT ON THE LATE PLEISTOCENE SMALL MAMMALS FROM THE ABRI DU RANC DE L'ARC (ARDÈCHE, FRANCE)

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The preliminary results of the excavations undertaken at the Abri du Ranc de l'Arc (Ardèche, France), a new site belonging to the Recent Mousterian, are presented. Evidence from the variation of small mammals in the four successive occupation levels (layers 7–4) indicates a climatic shift from cold (layers 7–6) to temperate (layers 5–4) conditions. Radiocarbon dates ($41,300 \pm 1,900$ B.P. and $42,200 \pm 1,600$ B.P. for layer 5, the main archaeological level) suggest a correlation of the upper portion of the sediments (layers 5–4) with the Hengelo interstadial (isotopic stage 3 of deep-sea cores).

Key words: micromammals, Recent Mousterian, Hengelo interstadial (Würm), climate, ecology, southern France, Ardèche.

1. INTRODUCTION

At about 20 km south of Aubenas, between the Rhône valley and the Cévennes, there are secondary limestone massifs with elevations up to 500 m. The Abri du Ranc de l'Arc (commune of Lagorce) is located in this area at the foot of a limestone cliff on the right bank of the Ibie, a tributary of the Ardèche river.

Situated at an elevation of 140 m, the rock-shelter is some 20 m long and 6 m wide. Excavations carried out in 1988 and 1989 by one of us (A.D.) have led to the recognition of four archaeological levels (layers 7–4) belonging to the Recent Mousterian. The main occupation level (layer 5) was dated to about 42,000 B.P. Very fragmentary remains of macromammals were also collected. Washing and screening of sediments yielded a number of small mammal species. It is worth remembering that well-dated Recent Mousterian (45,000/35,000 B.P.) sites are rather rare in southern France. The discovery of the archaeological sequence at the Abri du Ranc de l'Arc throws new light on the evolution and distribution of the Mousterian facies in this region.

2. STRATIGRAPHY

Two soundings covered an average thickness of about 2 m of deposit. The stratigraphy is as follows:

- Layer 1**, 70–80 cm. Slope deposits consisting of angular well-sorted limestone fragments. Sterile.
- Layer 2**, 10–20 cm. Stoney sediment lying in a matrix containing an abundance of ash and charcoal. Mesolithic.
- Layer 3**, 20–50 cm. Coarse deposit containing large blocks fallen from the roof.
- Layer 4**, 20–40 cm. Heterometric weathered limestone fragments lying in a clayey-sandy matrix; numerous elements with

- greatest dimension between 1—3 cm. Rich Mousterian lithic industry.
- Layer 5,** 10—15 cm. Weathered limestone deposit very dark in colour, including a dominance of small-sized elements; abundance of charcoals and Mousterian flakes.
- Layer 6,** 5—20 cm. Weathered homometric limestone fragments with greatest dimension up to 4 cm. Mousterian lithic industry poorly represented.
- Layer 7,** 30—50 cm. Weathered heterometric limestone fragments containing an abundance of elements larger than 4 cm. Sporadic Mousterian lithic industry.

3. MOUSTERIAN LITHIC ASSEMBLAGES

It should be mentioned that only the layers 5—4, which contain a very rich lithic industry, are indicative of an intense occupation and offer the possibility of a preliminary count. As a whole, the material under consideration consists of approximately two hundred tools and more than two thousand rough pieces.

Generally, the lithic assemblage is characterised by a mediocre style; both the tools and nuclei are of small size; some specimens are less than 2 cm in greatest dimension. The typology indicates a dominance of the Mousterian group consisting almost exclusively of scrapers, most of which present thinned convergent retouched sides; Upper Palaeolithic group is rather well-represented; denticulates are relatively rare; hand-axes and handaxe flakes are absent. Judging by these typological aspects and in spite of its peculiar stylistic and typometric features, the lithic industry from the Abri du Ranc de l'Arc appears to have a relationship only with the typical Mousterian. Some local similarities can be established with the Micromousterian from the level 1 at Baume d'Oullins (Combiér, 1967).

4. MICROMAMMALIAN FAUNAS

The material, consisting for the most part of isolated teeth, was collected from the layers 7—4. Although not very abundant, the small mammal species bring some interesting data concerning the local environmental conditions which prevailed during the deposition of the Mousterian sequence of strata. The distribution of the species, in ascending stratigraphic order, is as follows (in parentheses the number of first lower molars of arvicolids):

Layer 7 — *Sorex minutus* Linnaeus, *Microtus arvalis* (Pallas) (23), *Chionomys nivalis* (Martins) (12), *Arvicola terrestris* (Linnaeus) (1).

It is important to note that voles of the *M. arvalis/agrestis* group are present throughout the Mousterian layers. Although M^2 with an additional posterior triangle are lacking, the presence of *M. agrestis* cannot be definitely ruled out.

The rodent fauna from the layer 7, including only three arvicolids, is indicative of a rather uniform open landscape and rocky ground. The

dominance of the common vole (*M. arvalis*) associated with the snow vole (*C. nivalis*) corresponds to the open vegetation of a phase of cold continental climate (Chaline 1972). It should be noted that the occurrence of *Arvicola* proves, however, the existence of more humid terrain.

Layer 6 — *M. arvalis* (2).

The remains are insufficiently abundant to permit reconstruction of landscape, but the presence of the common vole suggests that the open environment characteristic of the layer 7, may have also prevailed during the deposition of the layer 6.

Layer 5 — *Clethrionomys glareolus* (Schreber) (two isolated molars), *Pitymys duodecimcostatus* (de Selys Longchamps) (2), *Microtus arvalis* (3), *Arvicola terrestris* (a fragmentary molar).

This assemblage, although relatively small, is indicative of an amelioration of the climate. In this connection it is worth remembering that the bank vole (*C. glareolus*) is an inhabitant of deciduous and coniferous woodland under rather dry conditions. *Pitymys* and *Arvicola* are inhabitants of a more humid grassland biotope. The common vole is well represented. The rodent association suggests that the landscape was constituted of an open vegetation with scattered conifers and shrub species.

Layer 4 — *Erinaceus europaeus* (Linnaeus), *Talpa europaea* (Linnaeus), *Sorex minutus*, *Apodemus sylvaticus* (Linnaeus) (2 M₁, a mandible with M₂₋₃), *Clethrionomys glareolus* (1), *M. arvalis* (17), *C. nivalis* (2), *A. terrestris* (eight isolated molars), *Oryctolagus cuniculus* (Linnaeus).

The faunal assemblage is more diversified. The coexistence of *Apodemus* and *Clethrionomys* indicates a continuation of the shift from cold to warmer and a development of patches of woodland in the detriment of the open environment. *M. arvalis* remains, however, the dominant species.

As a whole, the variation in the small mammals from base to top of the Mousterian stratigraphic sequence shows a shift from a continental (cold and dry) (layers 7—6) to more temperate conditions (layers 5—4). This amelioration allowed a partial reafforestation (development of woodland species growing in the sheltered valleys).

5. RADIOCARBON CHRONOLOGY

Two samples from the layer 5 including a low quantity of wood-charcoal were dated by Carbon-14 using accelerator mass spectrometry (Defleur & al. 1990). The charcoal from the two samples yielded similar dates: 41,300 ± 1,900 and 42,200 ± 1,600 B.P. A comparable figure (40,500 ± 1,600 B.P.) was obtained for the humic fraction from basic cleaning of the second sample.

The age determinations for the layer 5 at the Abri du Ranc de l'Arc are in good agreement with the radiocarbon date (obtained using the same method) indicative of the Hengelo interstadial at Grande Pile (Vosges) (Woillard & Mook 1982).

A correlation between the two lines of evidence concerning the micromammal ecological analysis and the radiocarbon dating indicates

a shift from cold to warmer at about 42,000 years B.P. The layers 5—4 can be assigned, therefore, to the beginning of the Hengelo interstadial of the isotopic stage 3 of deep-sea cores. This temperate oscillation, already known in Périgord at Le Moustier, is here recorded for the first time in southeastern France.

REFERENCES

- 1972 CHALINE J., *Les rongeurs du Würmien II de la grotte de l'Hortus (Valflaunès, Hérault)* in: H. de Lumley, *La Grotte moustérienne de l'Hortus. Etudes Quaternaires*, 1, 233—240, Marseille.
- 1967 COMBIER J., *De Paléolithique de l'Ardèche dans son cadre paléoclimatique*. Delmas ed. 462 p., Bordeaux.
- 1990 DEFLEUR A., VALLADAS H., RADULESCU C., COMBIER J. & ARNOLD M., *Stratigraphie et datation carbone-14, en spectrométrie de masse par accélérateur, du Moustérien récent de l'abri du Ranc de l'Arc (Ardèche, France)*. C.R. Acad. Sci. Paris., 311, (11), 719—724, Paris.
- 1982 WOILLARD G. & MOOK W.G., *Carbon-14 dates at Grande Pile: correlation of land and sea chronologies*. Science, 215, 159—161, London.

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