

DESCRIPTION OF THE SITES

THE SECTOR P16 SITE

In 1968, Jean Combiér began a series of investigations and systematic excavations at the site located at the base of Solutré rock. Several areas were excavated in the first year, alongside activities such as geometric planning, aerial photographs of the whole site area, fencing off parts of the site, laying drainage gulleys and installing a wet-sieving house. One of the areas investigated in the first year was the sector P16.

Sector P16 is located in the eastern part of the area enclosed by a security fence (fig. 2). This part of the site had always been considered sterile by previous investigators at Solutré and consequently sector P16 had escaped the unsystematic excavations carried out at the end of the nineteenth and beginning of the twentieth centuries, which had destroyed deposits in other areas.

Four quarters of P16 (north-west, north-east, south-west and south-east), each 16 m² in size and separated by 1 m wide baulks in the form of a cross, were opened in 1968 (plate 2, 1). Later, the baulks were removed and the site was extended along its eastern and south-eastern edges by one metre. Quadrat 45 and a row of four quadrats along the south-western edge of sector P16 were not excavated (fig. 3). A total of 95 m² was excavated altogether.

The first finds – horse bones associated with lithic artefacts – appeared at a depth of only 5 cms. below the present-day surface (plate 2, 2) and despite their close proximity to the surface the bones appeared to be in a good state of preservation. The lithic industry with many backed blades, borers and burins and a bone industry which included a »bâton de commandement« was attributed by Combiér (1976) to the »Magdalénian final«. The large amounts of bone from horse and several anatomically connected segments of carcasses of horse (eg. parts of the vertebral column) gave a general impression at the end of the first campaign that the site at sector P16 had been used primarily for butchering activities. A sondage revealed the underlying Lias marne at a depth of two metres below surface, showing that older cultural levels were not preserved *in situ* in this sector.

In his annual site report from 1968, Combiér described the first appearance of a concentration of blocks of talus in the south-western corner of the site, which he interpreted as a »dallage« or pavement. Reindeer and bison bones, and a reworked Solutrean lithic inventory were apparently associated with this feature. In the report from 1970, Combiér described a hearth located in the north-western corner of P16. Further excavations in sector P16 were undertaken during 1969-1974 and at the end of this period it was clear that the bulk of the finds had been deposited in the fill of an up to two metre wide channel-like feature, which ran diagonally from NW-SE through the site (plate 2, 2).

Excavations did not take place in sector P16 in 1975 or 1976, and in 1977 several urgent rescue excavations at other Palaeolithic sites in the region – Saut-de-Perron and Villerest – meant that investigations at Solutré had to be suspended altogether. Combiér excavated only once more at Solutré in 1987, when the sector I11 site was investigated.

THE SECTOR I11 SITE

In 1987, sections at Solutré were prepared as part of a program of sampling undertaken by the Centre National de Préhistoire to investigate the sedimentology of the site. A small sondage in sector I11 in the

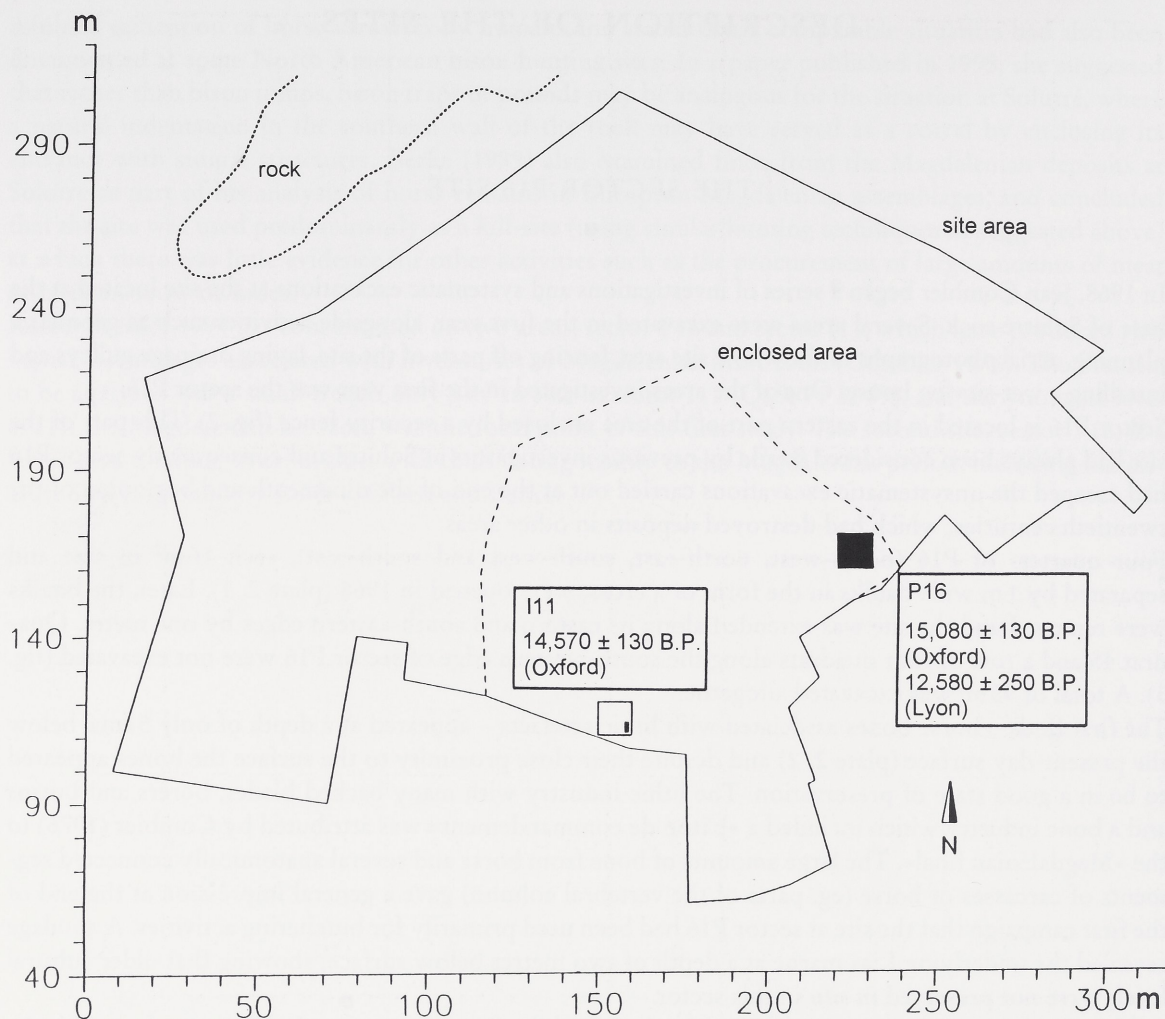


Fig. 2 Simplified map of the site at Solutré depicting the base of Solutré rock, the total area of the site, the area enclosed by a security fence and the location of the sector P16 site and the quadrats 69, 79 & 89 in sector I11. The results of C14-dating of bone samples from these areas are given in the accompanying boxes.

quadrats 69, 79 and 89 was excavated and sampled. Sector I11 is located towards the southern end of the area enclosed by the security fence, and the quadrats 69, 79 and 89 are in the south-eastern corner of this sector (fig. 2). The sondage was small, less than two square metres in size and four metres deep. The northern end of the deposits had been disturbed, presumably during earlier, pre-1960, excavations at the site. Nevertheless, two months of excavation in 1987 produced evidence of five cultural horizons at this small site comprising a «Magdalénian supérieur» horizon (Niveau 1), a small amount of finds from a horizon of unknown age, but possibly Magdalenian or Solutrean (Niveau 2), and Solutrean (Niveau 3), possibly Perigordian (Niveau 4) and Gravettian (Niveau 5) horizons (Combiér 1987).

The richest level at this site in terms of numbers of finds was the Magdalenian horizon, which attained 50-80cms. in depth and was densely packed with stone tools and well-preserved bones, mainly of horse. A fragmentarily preserved «sagaie», needle-cores and two pieces of mobiliary art were also recovered



Fig. 3 Plan of the sector P16 site. The quadrats 45 and 91-94 were not excavated. Bold lines indicate the four quarters of the site opened in 1968.

from the Magdalenian deposits in this sector. Features such as hearths and concentrations of lithic tools and debitage or concentrations of animal bones were not observed during excavation. The location of sector I11 on the slope below the Roche de Solutré, the presence of long bones embedded vertically in the deposits and the absence of articulated bones led Combier (1987) to postulate that the finds had probably accumulated at the site as a result of solifluction and movement of material down the slope.

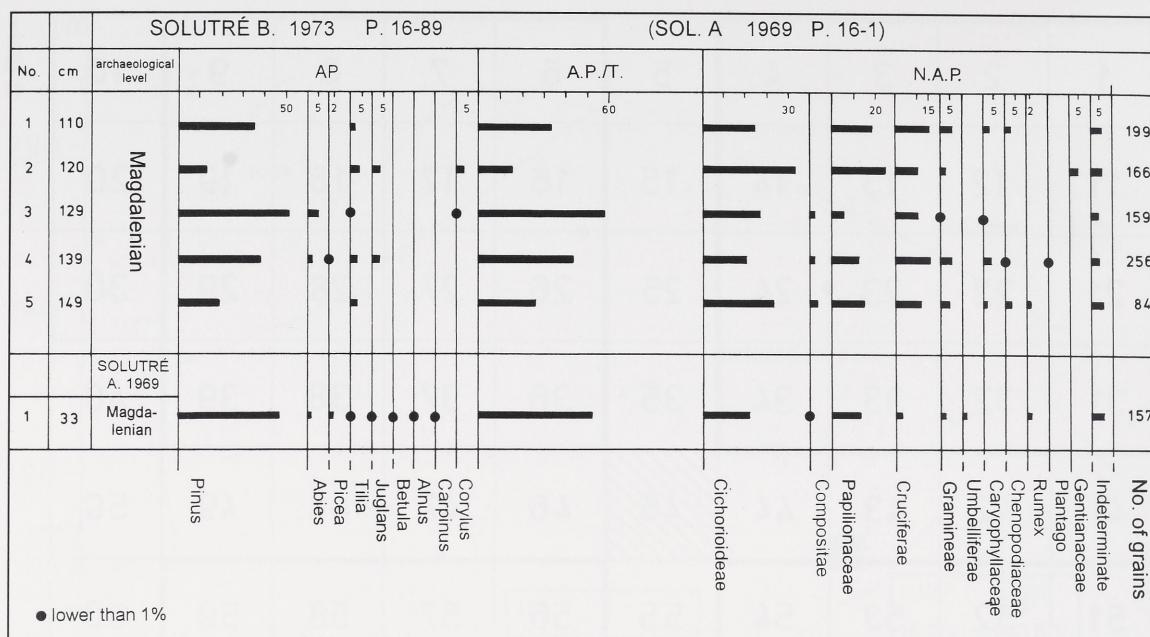


Fig. 4 Pollen diagram from deposits sampled in the sector P16 site. Taken and adapted from Argant and Argant 1985, fig. 2.

POLLEN ANALYSIS

Samples for pollen were taken from several sites during the course of Combier's excavations and analysed by Alain and Jacqueline Argant (1985). Deposits in sector P16 were sampled twice. In 1969, a column of eight samples (Solutré A) was taken through the Magdalenian deposits down to the underlying Lias marne. In 1973, five samples (Solutré B) were taken from Magdalenian deposits exposed in the southern profile in the south-eastern part of the site. The deposits in the sondage in sector I11 were not sampled.

The most significant sample, Solutré B, was described in detail (*ibid.*). Solutré B yielded a pollen diagram with relatively low values of aboreal pollen, which exceeded only 50% of the total pollen value in sample 3 (fig. 4). The dominance of pine (*Pinus*), associated with the low ratio of aboreal pollen, suggested predominantly cold climatic conditions in this region during the Magdalenian period. Nevertheless, low values of pollen of certain thermophilous taxa such as lime (*Tilia*), hornbeam (*Carpinus*), hazel (*Corylus*) and walnut (*Juglans*), showed that the climate was not extremely cold. Herb pollen was found in all the samples, but dominated during certain periods. Grasses (Graminae) were rare, and pollen of *Chenopodia* - *Rumex* and *Plantago* - indicated open terrain.

It was concluded (*ibid.*) that the pollen diagram could not be used to date the site. However, the more temperate character of this cold phase combined with an absolute date of 12,580 BP (see below, absolute dating) appeared to exclude deposition of the Magdalenian assemblage in sector P16 during colder stages of the Dryas, and indicated deposition during the Bölling Interstadial. However, the authors did note that the temperate conditions indicated by pollen of thermophilous taxa could have simply resulted from localised warmer temperatures at the site due to its sheltered position on the south-facing slope at the base of the Roche de Solutré.

SEDIMENTOLOGY

Two samples of deposits were studied sedimentologically during the course of excavations at sector P16. The first sample consisted of Magdalenian deposits exposed in the sections of a quadrat in the centre of the site (possibly quadrat 45 which has never been excavated); the second sample comprised deposits below the Magdalenian level, in the south-eastern corner of the site. The following is taken from an unpublished paper written by Gely, Kervazo and Porte in 1988. In general, the sediments exposed in the centre of this sector consisted of brown-grey clay at the top, yellow colluvial-like deposits below these and clay-like layers at the base. Pebbly lenses were recorded, as well as levels in which horizontally-aligned blocks of scree were observed. According to Gely, Kervazo and Porte, the alignment of the pebbles and scree blocks indicated that deposits accumulated at P16 during a series of depositional events, rather than a single phase of deposition.

Gely, Kervazo and Porte also sampled the sections in the sondage in sector I11. The Magdalenian find assemblage from Niveau 1 was stratified in »couche 2«, which comprised two strata (2a and 2b). The bulk of the Magdalenian finds was embedded in the upper strata (2a), which had been capped during levelling for the vineyards. The base of this layer was irregular with conical cavities. Dark brown in colour and slightly clayey, this deposit included blocks of abraded scree material as well as slabs of stone and small, unabraded pebbles in a fine, well-sorted gravelly component.

Layer 2b varied in thickness and had an irregular upper boundary. Finds from the Magdalenian assemblage of niveau 1 were stratified in the upper 20cms of this layer. Yellow in colour, layer 2b had a high clay component and contained small pebbles and slabs of scree.

At first sight, the Magdalenian finds appeared to form a single, homogenous horizon of material distributed from the top of layer 2a into the upper part of layer 2b. There was no evidence during excavation of a distinct hiatus separating the finds in layer 2a from those in layer 2b. However, a vertical plotting of the lithic artefacts undertaken during preliminary analyses of the find assemblages showed that the lithics were distributed in two separate horizons, located at the top and base of niveau 1 respectively.

ABSOLUTE DATING

A bone from quadrat 88 in sector P16 was dated using the C^{14} -method by the Laboratoire de Radiocarbone in Lyon to $12,580 \pm 250$ BP (Ly 393) (Delibras et al. 1976). During the current analysis a cut-marked upper third or fourth premolar of horse from sector P16 was submitted to the Oxford Radiocarbon Accelerator Unit in October 1996. The tooth was dated by the accelerator to $15,080 \pm 130$ BP (OxA-6730) (pers. comm. P. Pettitt). A cut-marked horse calcaneum from Magdalenian deposits in sector I11 (Q69, 79 and 89) was dated in Oxford at the same time as the P16 sample to $14,570 \pm 130$ BP (OxA-6731) (pers. comm. P. Pettitt). Both dates are substantially older than the one produced by Lyon (fig. 2). The difference in Radiocarbon ages could be due, for example, to the different laboratory methods used. If this is not the case, then the two samples from P16 indicate deposition of finds in this sector over a long period of time during the Magdalenian phase.

However, regardless of whether the differences in the C^{14} -dates relate to the laboratory method used or are the result of a long phase of deposition, none of them place accumulation of the Magdalenian horizon in sectors I11 and P16 into the brief warm phase called the Bölling Interstadial, as suggested by Argant and Argant (1985). According to a chronology of the Upper Weichselian established by Lanting and van der Plicht (1996), the short temperate Bölling Interstadial *sensu stricto* begins at around 12,500 BP. A date of 12,580 BP places the bone dated by the Lyon laboratory into Lanting and van der Plicht's older Dryas

I/»Bölling« (sensu lato). The dates produced at the Oxford laboratory, indicate deposition of cut-marked horse remains at Solutré in the period between the Pleniglacial and the Late Glacial Interstadial Complex.

LITHIC ARTEFACTS

Jean Combier (1973) described the lithic inventory from sector P16 as dominated by backed blades, borers and burins. About 1,100 lithic artefacts were recovered from the P16 site, according to lists of finds made during excavation, and the bulk of these finds are located in the south-eastern part of the P16 site. A study of the lithic inventory from this sector is currently being undertaken by Anta Montet-White of the University of Kansas.

An assemblage of Magdalenian lithic artefacts was recovered from the sondage in sector I11. The lithic industry from this site comprised 47 pieces of debitage and a few tools including 4 burins, 3 backed blades, 1 scraper, 1 truncated blade and 2 retouched blades (Combier 1987).