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The groove and splinter technique of working reindeer and red deer antler in Upper Palaeolithic and Early Mesolithic Europe

The need to study techniques as well as products has long been recognised among prehistorians. Particularly valuable insights have already been gained by studying flint implements in conjunction with cores, unfinished specimens and other debris of manufacture and important advances have also been made in the understanding of ceramic and metal types through paying attention to such topics as potting, metallurgy and smithing. Rather less notice has been taken of the way in which objects made from materials like antler and bone were fabricated. Yet in the case of hunters such materials of necessity played a prominent role in technology as well as reflecting in a unique fashion the interplay of cultural inheritance, economy and ecology. In drawing attention to an important piece of evidence from Professor Luis Pericot's splendid excavations at Parpalló in Eastern Spain, one may hope to stimulate interest in the waste antler material from prehistoric sites, material which it is to be feared has too often been discarded or overlooked so far as cultural significance is concerned.

The first to study the working of antler by Upper Palaeolithic man in any detail was Alfred Rust, excavator of the famous sites of Meiendorf and Stellmoor in the Ahrensburg tunnel-valley, north-

east of Hamburg (1). Reindeer antlers from the Hamburgian levels at each site were not only numerous, but owing to the water-logged character of the calcareous muds in which they were found exceptionally well-preserved. As a result of his close examination of this remarkably fresh material Rust was able to demonstrate convincingly the methods used by the earlier Upper Palaeolithic hunters of the Hamburg area to obtain the blanks from which to fabricate harpoon-heads and other objects from reindeer antler (2). In essence their method was to detach longitudinal strips or splinters from the inner arc of the beams, generally stopping short at the bez (fig. 1, a), occasionally reaching the brow tine (fig. 1, b), but never carrying on down to the root or stump of the antler. The splinters were first defined by cutting deep grooves by means of flint burins, so penetrating the hard outer wall of the antler down to the inner core; from this they would be detached by means of levering, sometimes assisted by undercutting by means of a special type of pronged flint. As a general rule the Hamburgians seem to have been content with one splinter from each antler (fig 1, a), but occasionally they removed as many as three: for instance an antler beam from Meiendorf not only lacked some two-fifths of its girth, implying the removal of probably two splinters, but also showed on the surviving portion a groove which defined a third one (3); again, a specimen from Stellmoor shows clear traces of the removal of one long and two shorter splinters (fig. 1, b) (4).

Traces of the same technique have since been recognized on objects from many points within the territory of the Late-glacial reindeer hunters of northern Europe: one may cite a reindeer antler from the Havel Lakes west of Berlin from which a strip some 54 cms. long has been removed from the inner arc of the beam (5); or, again, one might point to grooved antlers of reindeer from

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(1) A. RUST: "Das altsteinzeitliche Renntierjägerlager Meiendorf", Neumünster, 1937; and "Die alt- und mittelsteinzeitlichen Funde von Stellmoor". Neumünster, 1943.

(2) A. RUST: op. cit. 1937, pp. 90-98; 1943, pp. 128 ff.

(3) A. RUST: op. cit. 1937, p. 97 and taf. 36.

(4) A. RUST: op. cit. 1943, p. 128 and taf. 24.

(5) R. STIMMING: "Die Renntierzeit in der markischen Havelgegend", in Mannus, Zeitschrift für Vorgeschichte, VIII, Leipzig, 1917, pp. 236-237 and taf. IV, 8.

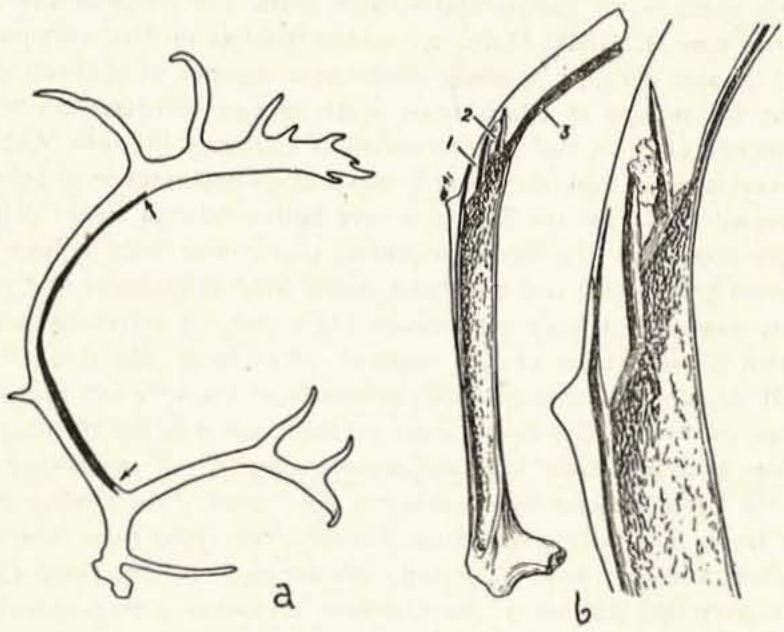

Fig. 1.—Reindeer antlers worked in the groove and splinter technique from Hamburgian levels at **a** Meiendorf and **b** Stellmoor, Schleswig-Holstein, Germany. Scales **a** (c 1/16), **b** (c 2/15 d 2/5). (After Rust)

the old territories of East (6) and West Prussia (7), both within the frontiers of present-day Poland, and also from Denmark (8). Again, as Rust pointed out (9), basically the same technique of working antler was employed by the cave-dwelling reindeer hunters of central and western Europe, side by side with the utilization of complete sections for batons and similar forms. For instance the Pekárna cave, Kostelik, Moravia, yielded reindeer antlers with parallel grooves defining in some instances a number of splinters and also the stumps of others from which several splinters had been detached (10). In the extreme south of Germany the late Magdalenian levels of Petersfels near Engen and the open station of Schussenquelle south of the Federsee have both produced traces of the same technique, the former including a specimen with a short incipient groove (11) and a pointed stump from which three and possibly more strips have been taken (12), and the latter an antler beam showing signs of the removal of at least one large strip (13). No systematic study has been made of the very rich material from the French and north Spanish caves, but it is not difficult to quote examples from late Magdalenian deposits: from Badegoule in the Dordogne one may mention a particularly fine reindeer antler beam from which two strips some 30 cms. long have been detached, together with an actual splinter c. 29.5 cms. long (14): and from Mongaudier in the Charente an antler with preparatory parallel grooves (15).

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(6) e. g. from Popelken, kr. Labiau. See W. GAERTE: "Auf den Spuren der Ostpreussischen Mammut-u. Renntierjäger", in Mannus, Zeitschrift für Vorgeschichte, XVIII, Leipzig, 1926, pp. 253-257.

(7) e. g. from kr. Kulm. See H. GROSS: "Auf den ältesten Spuren des Menschen in Altpreussen" in Prussia, bd. 32, 1938, pp. 118-119 and abb. 14.

(8) From the western edge of Mullerup Bog. See T. MATHIASSEN, in "Acta Archaeologica", 1938, p. 175.

(9) A. RUST: op. cit. 1943, pp. 143-144.

(10) K. ABSOLON and R. CZIZEK: "Die Palaeolithische Erforschung der Pekárna-Höhle in Mähren" in Mitteilungen aus der Palaeolithischen Abteil, am Mähr. Landesmuseum nr. 26, Brünn, 1932, tab. XX and XXI, 9.

(11) E. PETERS: "Die Altsteinzeitliche Kulturstätte Petersfels", Augsburg, 1930, taf. XVII, 2 b.

(12) E. PETERS: op. cit. in note 11, taf. XIX, 4.

(13) R. R. SCHMIDT: "Die diluviale Vorzeit Deutschlands", Stuttgart, 1912. See pp. 54-56, 187-188 and taf. XXIV, 8.

(14) I have to thank Mr. G. de G. Sieveking for recognising these in the Musée de l'Homme, Paris, and for obtaining photographs.

(15) Examined in the museum of the Institute de Paléontologie Humaine, Paris, by courtesy of Prof. Vaufrey.

Recent excavations in the north-east of England at Star Carr, Seamer, Yorkshire (16), have shown that basically the same technique was applied to red deer antler during the Pre-boreal phase of Post-glacial time in north-western Europe (pl. I; fig. 2). Like the Hamburgians and Magdalenians, the proto-Maglemosians of Star Carr sought to obtain the raw material for making their barbed points by removing strips of splinters from the antlers of their principal food-animal. Moreover they achieved this aim by closely similar means, cutting parallel grooves (it is typical that only in very rare instances did these converge at either end) along the length of the beam and forcing out the intervening strip of antler. The minor variations which exist may well be due to differences in the conformation of red deer and reindeer antler. Whereas the Hamburgians only detached strips down to the base of the bez or very rarely as far as the brow tine, the Star Carr people removed them right down to the burr or stump of the antler. Again, the red deer hunters rarely contented themselves with a single splinter (pl. I, top) as was the normal practice with the Hamburgians; as a rule they secured three or four (pl. I, middle) and even on occasion as many as five or six pieces, as well as occasionally removing splinters from the brow tine. One result of this was that splinters were removed from the sides of the beam as well as from its inner arc, so that only a narrow strip would remain with the tines or their stumps (pl. I, bottom) and this would commonly be found broken short near the base of the antler (cf. fig. 3). At Star Carr strips as long as 22 inches (c. 56 cms.) were obtained in this way.

From a culture-historical point of view the main interest of the Star Carr antlers is that they demonstrate a continuation into Post-glacial times of a technique of Upper Palaeolithic origin, one moreover which seems to have played only a very subsidiary role in later times. Indeed in the mature Maglemosian culture of the full Boreal period barbed points were made almost invariably of bone

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(16) Preliminary accounts of material from the 1949 and 1950 seasons have appeared in the "Proceedings of the Prehistoric Society" (Cambridge), Vol. XV, pp. 52-69 and Vol. XVI, pp. 109-129. A full account, including the material from the more extensive excavations of 1951, will appear in "Excavations at Star Carr: An Early Mesolithic Site at Seamer, near Scarborough, England" to be published by the Cambridge University Press.

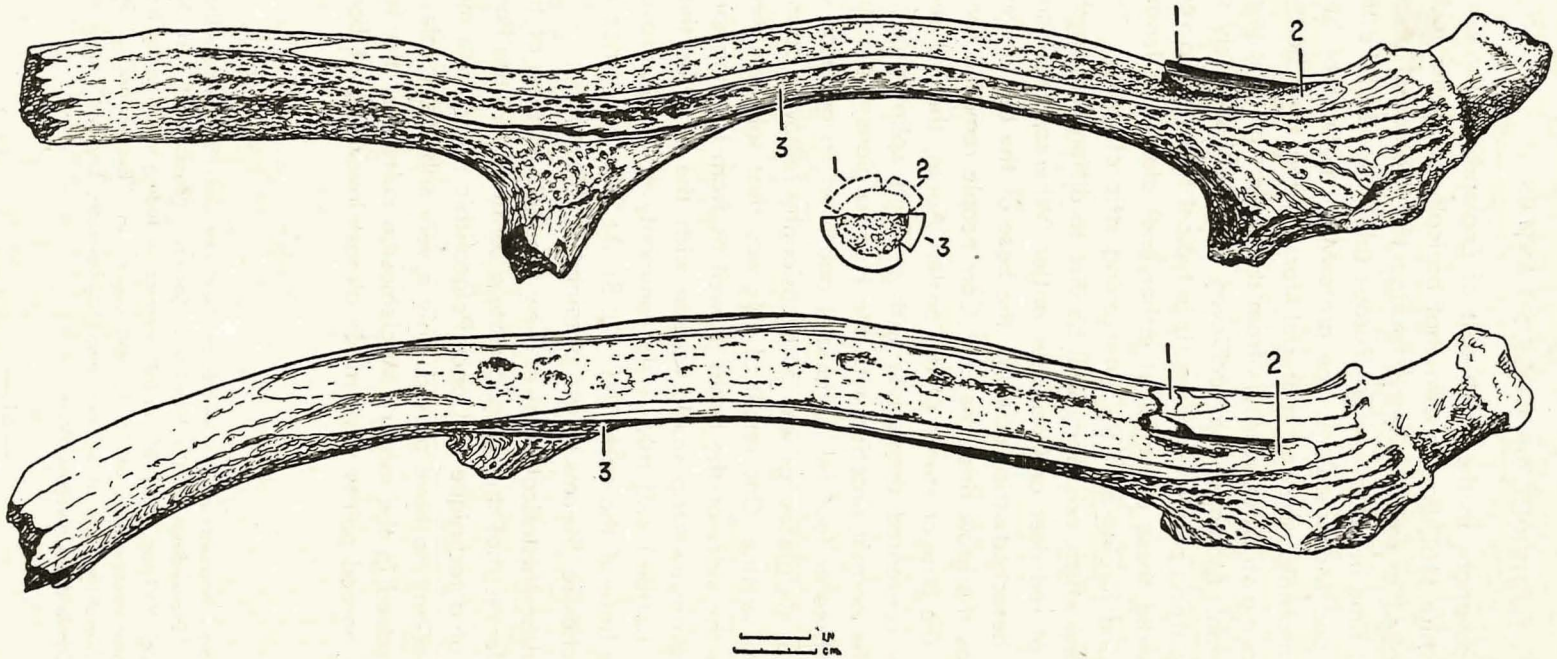

Fig. 2.—Red deer antler worked in the groove and splinter technique from the Proto-Maglemosian site of Star Carr, Yorkshire, England. Two splinters or strips of antler have been removed and a third has been partly defined by a groove (c 11/30).

rather than antler (17). The choice of antler and the method of working it thus emphasize the intermediate status of the Star Carr people between the Magdalenians and Hamburgians and the Maglemosians proper.

Geological periods	Climatic phases	Vegetational zones (Jessen)	Archaeological cultures and stages	
Post-glacial	Sub-atlantic	IX	Iron Age	
	Sub-boreal	VIII	Bronze Age	
			Neolithic	Mesolithic
	Atlantic	VII	Erteboelle	
	Boreal	V-VI	Maglemosian (Mullerup, Svaerdborg)	
	Pre-boreal	IV	Proto-Maglemosian (Star Carr, Klosterlund)	
Late-glacial	Younger Dryas	III	Ahrensburg (Stellmoor, upper) / Lyngby (Noerre Lyngby)	Upper Palaeolithic
	Alleroed oscillation	II	Bromme	
	Older Dryas	I c		
	Boelling oscillation	I b		
	Oldest Dryas	I a	Hamburgian (Meiendorf and Stellmoor, lower)	

Table showing the sequence of human settlement in Northern Europa

Proof that the Star Carr technique is in truth Upper Palaeolithic in origin is to be found in the identical treatment of red deer

(17) The Boreal Maglemosians did occasionally use stag antler as a material for their barbed points, as witness finds from Svaerdborg and other of the Zealand sites, but this was very exceptional. See "Danske Oldsager", I, núm. 173 and page 66, Copenhagen, 1948.

antler in the southernmost territories of the Magdalenian culture beyond the range of the reindeer during the Late Pleistocene. During a recent journey to Spain (18) the author had the opportunity

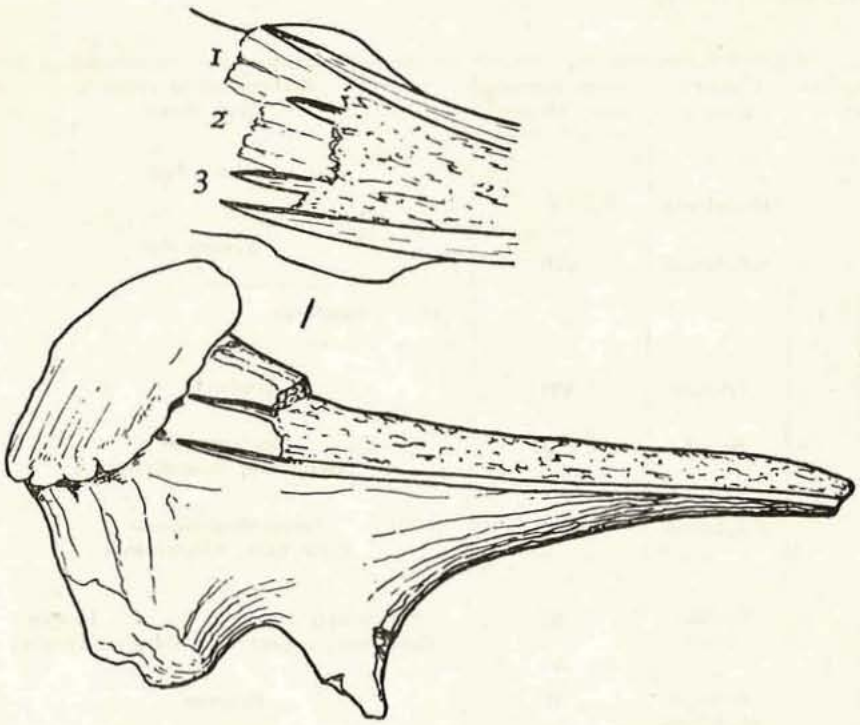

Fig. 3.—Base of red deer antler from which three strips have been removed in the groove and splinter technique from a Magdalenian IV level at Parpalló (Valencia) (2/3).

of examining the lower ends of shed stag antlers worked in this fashion from the Cueva Palonia, Asturias (19), and from a Magdalenian IV level in the cave of Parpalló, Valencia, excavated with such brilliant results by Professor Luis Pericot (20). By courtesy of the authorities it was possible to make a summary sketch of the

(18) The author is grateful to the British Academy for a generous grant towards the expenses of this journey.

(19) Mus. no. N. 244. The author is indebted to the Director, Prof. J. Martínez Santa-Olalla, for allowing him to examine this specimen.

(20) Valencia, Museum of Prehistory of the Diputación Provincial, núm. P-329. The object was described by Prof. L. PERICOT GARCIA: "La Cueva del Parpalló (Gandía), Excavaciones del Servicio de Investigación Prehistórica de la Excelentísima Diputación Provincial de Valencia", Madrid, 1942, as a poignard or dagger (p. 92, fig. 62, 2).

example from Parpalló (fig. 3), which can be seen to consist of the lower end of the residual part of an antler beam broken short in the manner indicated. Clearly visible are scars left by the extraction of three parallel strips of antler, which had evidently been removed right down to the root of the beam as in the case of those from Star Carr. Indeed the Parpalló and Cueva Palonia specimens are so similar to broken pieces from Star Carr that they might easily have come from the Yorkshire site.

The technique of extracting strips of splinters of antler by cutting parallel grooves and levering or pulling out the intervening portion is thus seen to be of widespread occurrence among the reindeer and red deer hunting peoples of Europe during Late-glacial and Early Post-glacial times (21). It would be interesting to know whether it was also employed by the Azilians of Northern Spain and Southern France, among whom the stag antler harpoon was in widespread and common use and whose Late Magdalenian antecedents are commonly assumed. This brief note is offered in hommage to a distinguished Spanish archaeologist in the hope that he will find many successors. Examination of discarded antler and bone material, particularly from cave or shelter sites for indications of technique is only one of the innumerable tasks that await research.

(21) Several finds of red deer antlers with traces of the groove and splinter technique have been recovered from Danish soil but none has yet been found in datable deposits.

Red deer antlers worked in the groove and splinter technique from the Proto-Magdalenian site of Star Carr, Yorkshire (England). Scales: top (1/4) middle (1/2), bottom (3/7).