

Palaeolithic Spear-Throwers.
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IN plate B XIX-XX of *Reliquiae Aquitanicae* (Lartet & Christy, 1875), a sculptured reindeer antler from Laugerie-Basse was figured with the description, 'a long, slightly curved Harpoon-head'. Many years later Emile Carthailac found among Lartet's papers in the University Library at Toulouse a letter from a correspondent in Ireland suggesting that the object in question might be a hooked spear-thrower of a type well-known in Australia. Unfortunately the sheet with the writer's signature was missing, so the first person to identify the spear-thrower as a Palaeolithic weapon must remain anonymous (Carthailac, 1903). Since then many more have been found; in 1907 Breuil listed 38 throwers or fragments from various Magdalenian sites (Carthailac and Breuil, 1907), and it is possible now to bring the number up to 66. Of these two, possibly three, are complete, and six are complete in so far as the part made of antler is concerned, but were certainly meant to be lengthened by insertion in a handle, probably of wood. The rest are more or less fragmentary, but in 39 the hook is preserved, and the rest can be identified by comparison with more complete specimens.

The subject of these weapons has been treated at various times by Adrien de Mortillet 1891), Carthailac (1903), Breuil (with Carthailac, 1907: with Lantier, 1951), Begouen (1912), Renaud (1925), Montandon (1934). More recently Guyan (1944) has studied the collection from Kesslerloch in relation to the rest. In addition, individual specimens have been described by their discoverers. Nevertheless, there is room for a more detailed general survey of the whole range now available.

Palaeolithic throwers are of course preserved only in so far as they are made of reindeer antler,¹ but a great many now perished must have been of wood. Their area of distribution is S.W. France, with an offshoot in what may be described as the Bodensee Magdalenian, that is, in the caves N.E. of Schaffhausen and in the Petersfels rock-shelter across the German frontier. The earliest known specimens come from the Magdalenian III of Le Placard, but in the death-scene in the pit at Lascaux a hooked thrower is clearly depicted lying between the bird-headed man and the spear, in a painting which is pre-Magdalenian in date. The great period of spear-throwers is however the Magdalenian IV; one only is known with certainty from the Magdalenian V; after that they disappear from S.W. France, but in the Bodensee Magdalenian survive in association with uniserial and biserial harpoons.

With two possible exceptions, Palaeolithic throwers are of the hooked, or male type, their size and shape being conditioned by the raw material. The beam of an adult reindeer antler can furnish a shaft, often only slightly curved, with a maximum length of about 34 cm. and from this were made throwers of the stick type, with a variant, unknown in

¹ There are two incomplete specimens in mammoth ivory, from La Madeleine and Kesslerloch.

modern specimens, in which a palm of the antler, usually the bez tine, is carved into a statuette which incorporates the hook¹. Only two are known—and these not absolutely certain—of the so-called androgynous type, in which the spear lies in a groove, as in the female type, but with a small projection to catch its base².

For convenience of description I shall use the term 'unweighted thrower' for those which, however elaborately decorated, have essentially the form of a simple rod or stick, and 'weighted thrower' for those in which the shaft is topped by a piece of sculpture, leaving aside for the moment the question whether the carved figure, which does in fact add weight to the head, served any useful purpose, or was purely decorative.

The Magdalenian artists gave full play to their skill and fancy in the making of these objects. The unweighted throwers are often carved or engraved down the whole length of the shaft, while the weighted type has provided some of the finest sculptures in the round known to us in Palaeolithic art; so fine, that Breuil and others have suggested that they are ceremonial, and not meant for use, a theory which I shall discuss later, but which I think should be invoked with caution.

I have said that only a minority are complete. Of the remainder, the greater number of unweighted throwers are broken short at a distance of 30-60 mm. below the hook, a point which Monsieur Leroi-Gourhan tells me takes the maximum strain when the spear is thrown. In the weighted type the shaft is usually broken just below the sculpture.

The unweighted throwers form a group of 41, 62 per cent of the whole number. They include the four earliest known examples, from the Magdalenian III of Le Placard (Breuil 1912; Chauvet 1910). Like the thrower depicted at Lascaux they are of a very simple type, straight sticks, rather narrow, but with a well defined hook (fig. 1, nos. 1, 2). No. 1, which is elliptical in section and decorated with a simple incised pattern, has a flat surface 62 mm. long immediately below the hook, with a narrow groove to steady the spear. No. 2 is interesting because it is merely a tip, with a long bevel on one side for hafting with a separate shaft, probably of wood³. Here again, the surface on which the spear rested is flat. This very simple type is not confined to the early Magdalenian. A similar, though more robust specimen (fig. 1, no. 3) was found by Piette in the late Magdalenian IV of the Mas d'Azil (Piette, 1907, pl. XXXI, no. 2). In this the flat surface is broad and the hook solid and well detached, so that when complete it could have propelled quite a large spear. Two others come from the Bodensee Magdalenian—one from Kesslerloch, broken just below the hook, is of mammoth ivory (Guyan, 1944, p. 81), the other a fragment of antler roughly cut, is in the Petersfels collection at Freiburg im Breisgau, the only thrower from this site⁴.

Other unweighted throwers from the Magdalenian IV and the Bodensee Magdalenian are more elaborately decorated. A group of 21 is remarkably uniform in type. The top of the shaft represents the head of a horse, more or less stylized, of which the forelock forms the hook, while in those which are sufficiently complete the chest and forelegs

¹ The closest parallel outside the Palaeolithic is a wooden thrower from excavations at Key Marco in Florida, cited by Renaud (1925). In this a small rabbit is carved at the top of the shaft, his tail forming the hook.

² Female and androgynous throwers could only be made in antler if the beam were absolutely straight over a sufficient length, which is rarely the case.

³ It should be noted that in all cases where there is a flat surface on which to rest the spear the shaft must have been straight. It is probable that in such throwers the uncurved part of the beam was used for making the upper end only, and they were lengthened by hafting on to wood.

⁴ It is not figured in Peters, 1930 and 1932.

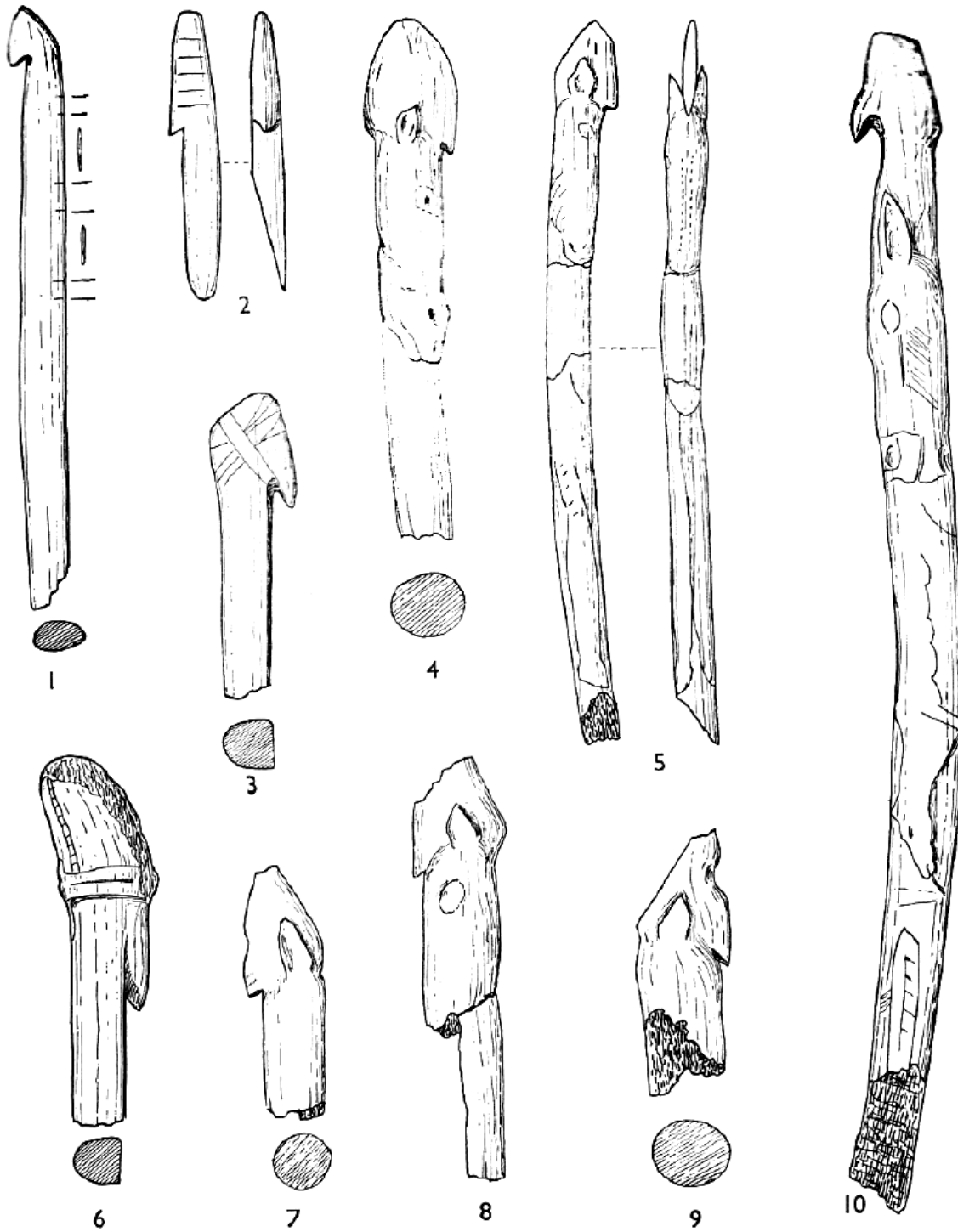


Fig. 1. Upper Palaeolithic spear-throwers (²/₃)

Nos. 1,2 Le Placard (S. Germain-en-Laye; *after* Breuil); no. 3 Mas d'Azil (S. Germain-en-Laye); no. 4 Isturitz (Saint-Périer coll.; *after* Saint-Périer); no. 5 Bruniquel (*after* Carthailac); nos. 6, 9 Kesslerloch (Rosgarten Museum, Constance); nos. 7, 8 La Madeleine (Musée des Eyzies); nos. 10 Laugerie-Basse (S. Germain-en-Laye; *after* Lartet and Christy)

can be seen engraved or lightly sculptured down the length of the shaft. These horse-head throwers are found over the whole distribution area, but more especially at three sites —La Madeleine (4), Bruniquel (8) and Kesslerloch (5). The most complete specimens are from Bruniquel, and are well described and figured by Carthailac (1903)¹. He says that seven were found in the Grotte des Forges and one in the Abri du Chateau, and of these he figures six, of which three are complete down to the point of junction with the haft. They are small and slender compared with most of those from Kesslerloch and La Madeleine; the largest is 25.9 mm. long, with a maximum diameter of 12 mm. Carthailac says that they are made from young antlers, only slightly reduced by scraping and chiselling. The hook is on the concave side of the beam, as in all throwers of this type; any other position would be impossibly awkward for laying the spear. Even if the more slender shafts were straightened before use they would always have a tendency to revert to their natural curve. The lower end in the complete specimens is rather roughly prepared as though for insertion into a socket. Carthailac says, '*il paraît avoir été maché par de nombreux coups, rendu peut-être intentionnellement rugueux par ce martelage. Il est grossier, pourrait-on dire encore, comme si sa destination eut été d'être enveloppé, lié, caché*'. Fig. 1, no. 5 (Carthailac, 1903, p. 310, fig. 124) shows the characteristic features of this type of thrower—the mane rising between pricked ears and ending in the point which forms the hook, the muzzle pressed down on the chest, and the exaggeratedly long forelegs. The mane itself may be more or less rounded, as in fig. 1, no. 4 from Isturitz (Saint-Périer, 1936, pp. 121-3) or shaped like a Phrygian cap as in fig. 1, no. 9 from Kesslerloch (Schmidt, 1912, pl. XXXI, no. 8) and fig. 1, nos. 7, 8 from La Madeleine. In the Isturitz thrower, as in those from Bruniquel and in two fragments from Gourdan (Piette, 1907, pl. IX, nos. 3, 4) the features of the head—eye, muzzle and beard—are well indicated, but at La Madeleine and at Kesslerloch (Guyan, 1944, p. 83) stylization has been pushed very far, and in some cases only the ears remain. The La Madeleine and Kesslerloch throwers, most of which are broken off just above or just below the muzzle of the horse, are most strikingly alike—so much so that it is tempting to suppose that the founding fathers of the Bodensee colony actually set out from La Madeleine itself.

The remaining 13 unweighted throwers show much greater variety of subject. They include two well-known intact specimens from Gourdan and the Mas d'Azil (Piette, 1907, pl. VIII, no. 1 and p. 77, fig. 60). The Gourdan thrower (fig. 2, no. 1) 28.5 cm. long, is made from a fairly stout beam of antler with a marked curve. The top is carved into a small grotesque anthropoid head, with a kind of pigtail which forms the hook. The eye-sockets were originally filled with a reddish ochreous clay, of which traces remain. The base is partly covered with a very hard concretion, but it can be seen that it expands slightly, and is pierced by an elliptical hole. It ends in a blunt point which is not central. At 11 cm. from the head there is a bulge in the shaft on which are engraved two sets of parallel lines separated by a vertical stroke. These cannot be interpreted as figuring some kind of wrapping, because they go only half-way round, the side not drawn being plain. In this thrower, as in some of the horses' heads, the hook shows slight signs of polish from use.

The Mas d'Azil thrower (fig. 2, no. 6) has affinities with the horse head type, but is vigorously carved and more realistic. The shaft represents the fore-quarters of an ibex; the head with well-marked beard is pressed on to the chest, and the horns curl round behind

¹The Lastic collections from Bruniquel were dispersed at the beginning of the present century, and Breuil informs me that most of the throwers went to Berlin. I have therefore not been able to examine them.

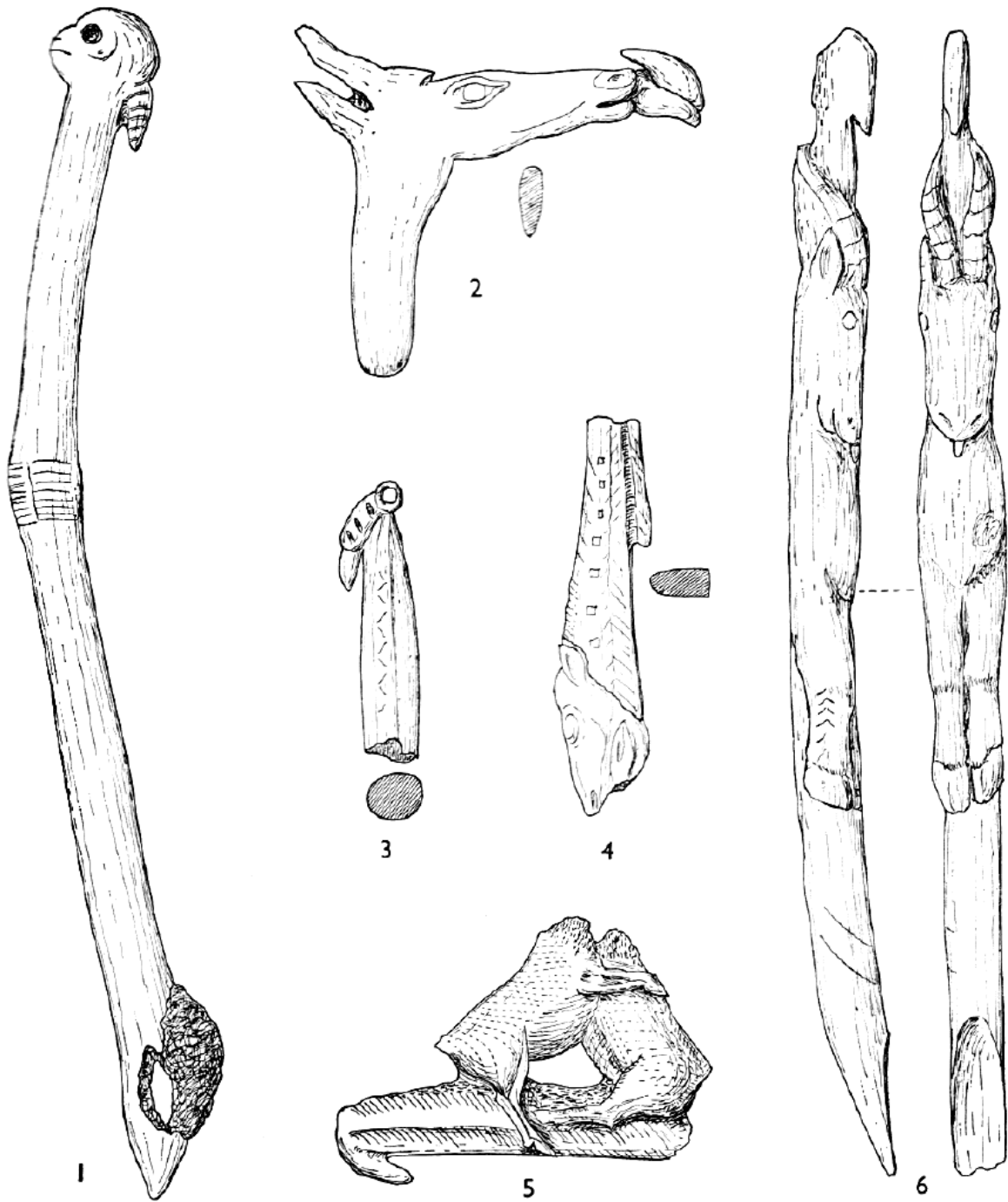


Fig. 2. Upper Palaeolithic spear-throwers ($\frac{2}{3}$)
 No. 1 Gourdan (S. Germain-en-Laye; *after Piette*); no. 2 S. Michel d'Arudy (S. Germain-en-Laye); no. 3
 S. Michel d'Arudy (S. Germain-en-Laye; *after Piette*); no. 4 Kesserloch (Museum zum Allerheiligen,
 Schaffhausen; *after Guyan*); no. 5 Trois-Frères (Musée du Pujol; *after Begouën*); no. 6 Mas d'Azil
 (S. Germain-en-Laye).

the hook, which rises between them. The legs and hooves are well proportioned and carved in some detail. The thrower is 27 cm. long, and ends in a double bevel which must have been hafted in the forked end of a wooden handle—a refinement on the Bruniquel method.

A curious object from the Mas d'Azil (Piette, 1907, pl. LI, no. 2) may be an intact thrower, and is so interpreted by Breuil, (Breuil and Saint-Périer, 1927) but there are difficulties in the way of accepting it. It is 21 cm. long, and represents an eel, against whose head is carved the tail of a small fish, one fork of which forms a rather fragile hook. Just below it on the body of the eel is a small fin which might interfere with the laying of a spear. The base is pierced by an elliptical hole and ends in a thick curved point. The length is short for a spear-thrower, but not impossibly so, and in spite of the rather unconvincing hook I include it provisionally in my list.

Two unweighted throwers from the Dordogne are of the type in which the base is slightly thinned and roughened for hafting as at Bruniquel. One of these was found by Peyrony in the middle (Magdalenian V) horizon of La Madeleine (Capitan and Peyrony, 1928, fig. 38, nos. 7, 8) and the other, from Laugerie-Basse (Lartet and Christy, 1875, pl. B, XIX-XX) may possibly be of the same age. The La Madeleine thrower (fig. 3, no. 6) which is elaborately carved, is 27.5 cm. long, rather slender, and the shaft is bent rather than curved. There are traces of red ochre in the hollows of the carving, suggesting that it had been painted red all over. At the top of the shaft is an elongated head of a horse, with mane rising between the ears as in the more usual horse head type. Next comes a deer head, equally elongated, with antlers curved round an egg-like object below the horse's muzzle, which seems to be a shortened and much stylized version of the animal's chest as represented on the Bruniquel throwers. Below the deer's head two barbed lines are engraved on either side of the shaft. These drawings of biserial harpoons from a horizon, in which only uniserial harpoons were found, confirms similar evidence from other sites—e.g. Isturitz—tending to show that barbed spears in wood already existed before their appearance in reindeer antler. The base of the shaft is cut and scraped in preparation for hafting, rather more neatly than in some other specimens. The tip of the forelock is broken, and Peyrony assumed that the hook was here, as is usual. This, however, would bring the spear on to the convex side of the shaft—an impossible position, which perplexed me until I handled the original at S. Germain. I then saw that the broken forelock would have been too thin to make a serviceable hook. At the back of the head, on the other hand, there is a considerable fracture scar, and I am convinced that the hook was there.

The Laugerie-Basse thrower (fig. 1, no. 10) is made from a big antler and is very robust, with a length of 29.9 cm. The horse's head at the top is partly carved, partly engraved but with much less detail and finish than in the La Madeleine specimen. The hook, which is slightly askew does not form part of the head, being placed well above it, but the shaping of the top of the shaft faintly recalls the 'Phrygian cap' mane of the standard horse head type. Below the muzzle of the horse is a small reindeer drawn in profile and partly in relief whose antler is on the other side of the shaft, shared with a second, less finished animal. Below the reindeer again is engraved a stylized fish (Breuil and Saint-Périer, 1927). The base is rather roughly battered and scraped for hafting, and the break on the side figured has destroyed the fish's tail.

The remaining throwers are mere fragments—three from Gourdan (Piette, 1907, pl. IX, nos. 2, 5; pl. LXVIII, no. 5), and one each from Laugerie-Basse (Carthailac and Breuil, 1907, fig. 3), Bruniquel (Capitan, Breuil and Peyrony, 1910, fig. 182), Mas d'Azil

Begouen, 1912, fig. 9), Lourdes (Piette, 1907, pl. XXXVII, no.1), S. Michel d'Arudy (Piette, 1907, p. LXXXIX, no. 6) and Isturitz (Saint-Pèrier, 1936, p. 121). They include heads of musk-ox, deer, goat and a possible bison, with the hook broken or imperfect. There are TWO fishes—from Isturitz the top of a shaft with hook complete, and with a trout or salmon engraved on each side; from Gourdan a stylized fish of unidentifiable species whose fin, now broken and smoothed off, formed the hook. The Mas d'Azil fragment looks as though it might represent something wrapped up in an animal skin, but it is really impossible to interpret. Fig. 2, no. 3 from S. Michel d'Arudy¹, described by Breuil (Alcalde de Rio, Breuil and Sierra, 1912, fig. 235) as a bird's head with the beak as hook, I will consider later, with some weighted throwers that seem to give the clue to an alternative interpretation.

It is on the weighted throwers especially that the Magdalenian craftsmen have lavished their imagination and skill. Breuil (Breuil and Lantier, 1951) and Begouen (1912) think that the majority of the sculptured figures found in the Magdalenian IV come from these weapons, and I have accordingly included all those in which the attitude clearly suggests their origin, even when they have been broken off the shaft and the hook is missing. In some cases they seem to have been cut away from the shaft, presumably after it was broken, and a few are mutilated intentionally. Of the twenty-one recorded specimens one is complete, and in ten the hook is intact, or nearly so. They are distributed as follows: Mas d'Azil (6), S. Michel d'Arudy (5), La Madeleine (3), Bruniquel (2), Trois Frères (2), Bedeilhac (1), Enlène (1), Isturitz (1). They do not occur in the Bodensee Magdalenian.

Fig. 3, no. 1, is the admirable complete specimen from the Mas d'Azil found by M. and S.-J. Péquart (Péquart, 1942). It is 33.4 cm. long and the carving at the head represents a young ibex, balanced as though it were standing on top of a rock. All the details are beautifully rendered and the attitude is graceful. The broadly humorous scene imagined by the artist is thus described by the discoverers. *'Planté sur le fût du propulseur le jeune animal retourne complètement la tête, oreilles dressées, vers son arrière-train, théâtre d'une évacuation peu banale . . . De dessous la petite queue retroussée jaillit une sorte de boudin bizarre, qu'adornent à son extrémité deux petits oiseaux stylisés qui se becquètent. C'est ce motif adventice . . . qui constitue le crochet même du propulseur'*. As in the Gourdan thrower the eye-sockets must have been filled with some kind of plastic matter, which had apparently left no trace. The shaft, which has a conventional design on both sides, expands slightly towards the base which is pierced by three elliptical holes and ends in a blunt point.

The joke perpetrated by the artist of the Mas d'Azil evidently had a certain success in the Pyrenean region. In 1951 Romain Robert (Robert, 1953) discovered at Bedeilhac the head of a thrower in which the same subject is treated with some differences of detail (fig. 3, no. 2). The young animal is crouching, with head turned to the left instead of to the right; the tail is not raised, but is resting on the *boudin*, the base of which is perforated; there is one bird instead of two, and its body is engraved with parallel lines of which the meaning is not clear. The eye-sockets still contain a dark resinous matter, and a tiny pit in each of the hooves was encrusted in the same way. A protuberance on the chest is pierced by a small hole (the Mas d'Azil ibex had a depression at this point which did not go right through). Robert, after considering various possibilities, concludes that the Bedeilhac thrower was the first effort of an artist who later produced the masterpiece of the Mas d'Azil. I think, on the contrary, that the Bedeilhac piece is a copy, or even the copy

¹ Breuil has added a fragment of shaft from the same site. After handling the two pieces at S. Germain I doubtful whether they come from the same object, in spite of the identical decoration.

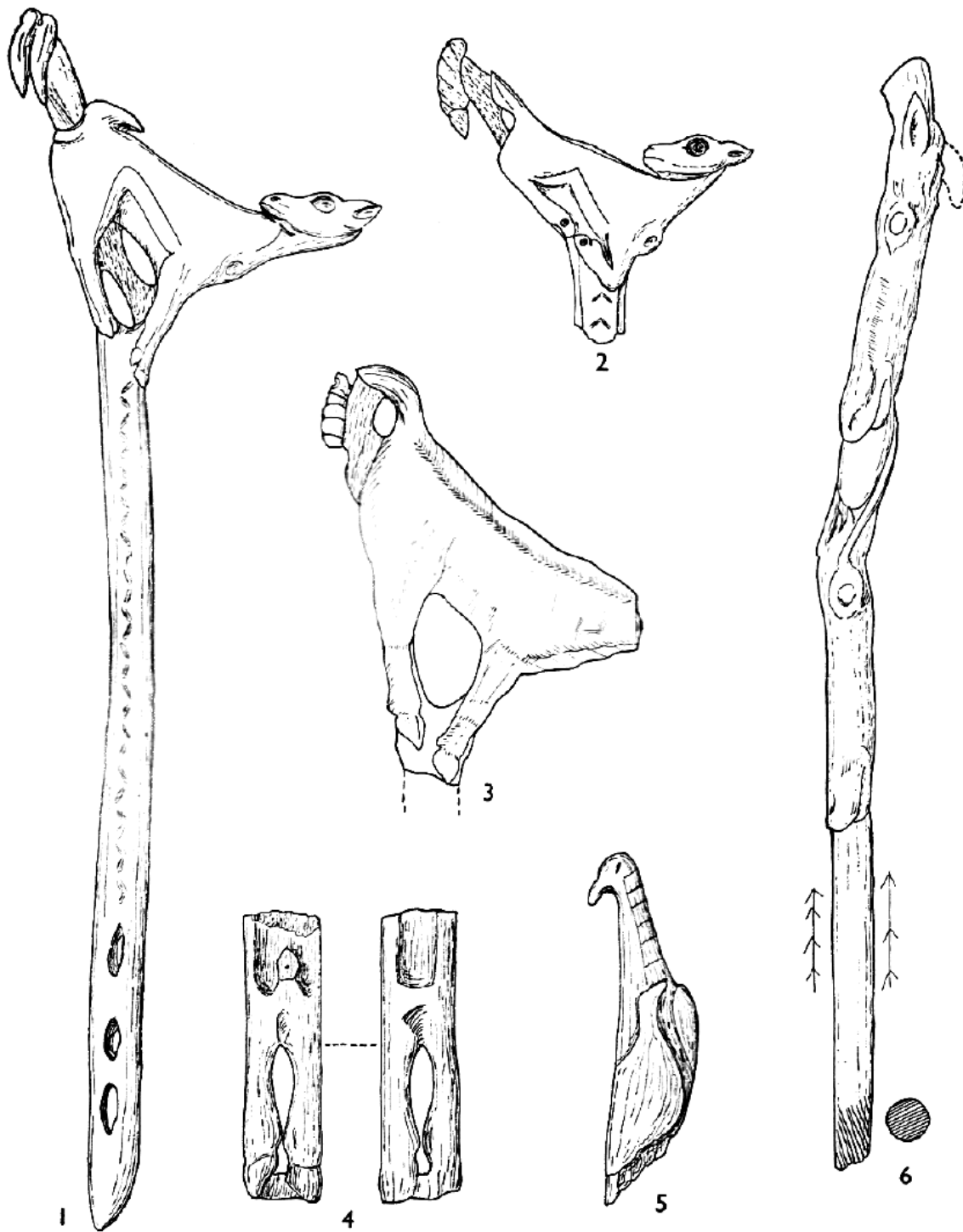


Fig. 3. Upper Palaeolithic spear-throwers (²/₃)
 No. 1 Mas d'Azil (Péquart coll.; *after* Péquart); no. 2 Bedeilhac (Robert coll.; *after* Robert); no. 3 S. Michel d'Arudy (S. Germain-en-Laye, *after* Piette); no. 4 Isturitz (Saint-Périer coll.; *after* Saint-Périer; no. 5 Trois Frères (Musée de Pujol); no. 6 La Madeleine (S. Germain-en-Laye).

of a copy, of the Mas d'Azil, and for the following reason. There is a definite stylization and loss of meaning in the treatment of the 'evacuation' theme, so, that without the more realistic version of the Mas d'Azil it is doubtful whether it could have been understood to-day. This is a well-known process in a series of copies made from copies (*cf.* the Macedonian stater, etc.) and in this particular case a further stage, which seems to have escaped attention so far, can be seen in a thrower from S. Michel d'Arudy now at S. Germain (Piette, 1907, pl. XCI, no. 10), shown alongside the other two in fig. 3, no. 3. Here we have a full-grown ibex standing in roughly the same attitude as the young animal from the Mas d'Azil, though the head, which has been cut off, cannot have been turned backward. The tail is in the same position as in the Bedeilhac thrower, and Piette notes that it is supported by a kind of bar, on which is carved an object which he supposes to be a horn. When it is compared with the other two the meaning becomes clear. The 'bar' is the *boudin*, and the 'horn' is the bird (of which the tail is broken), but we are now separated by so many removes from the original that the meaning is completely lost. A re-examination of the unweighted thrower from S. Michel d'Arudy already mentioned (fig. 2, no. 3) suggests that we have here, not the beak of a bird, as supposed by Breuil before the discovery of the other pieces, but once more the little bird of the 'evacuation' scene, this time perched directly on the end of the shaft.

A fragment from S. Michel d'Arudy in the Piette collection at S. Germain (fig. 2, no. 2), which I publish with the kind authorization of Monsieur R. Lantier, has not till now been identified as a thrower, but in spite of Breuil's opinion to the contrary I think it sufficiently probable to be included here. It represents the head of a deer nibbling at two elliptical objects, which certainly represent leaves, but which are plump enough to form a strong and perfectly serviceable hook. The long outstretched neck of the animal is carved in the tine. All this part is executed with skill and delicacy, but the shaft is broken off, or perhaps hacked off in a rough fork, which appears unfinished, rather than finished and afterwards broken. Possibly the head and neck were carved on a piece of young antler whose general shape suggested the subject, with the intention of splicing on a wooden shaft, but for some reason the job was left undone. In any case, the form and position of the hook make it difficult to believe that there was no intention of making a thrower, especially as this is not the only case in which the hook is held in the mouth of an animal. A fragment from the Mas d'Azil represents the head of a big fish with a very solid hook protruding from its jaw (Piette, 1907, p. 70, fig. 53)¹.

One of the liveliest sculptures comes from the Trois-Frères (Begouen, 1931). Here two young ibexes are at play astride the shaft of a thrower (fig. 2, no. 5). The bodies are carved with skill, and are covered with the fine lines and dots used by the Magdalenian artists to represent the pelt. The heads are missing, not cut off, as in some cases, but never made, because the palm of the antler was not big enough. The necks are thinned and roughened in a way which suggests that the heads may have been added in some plastic matter; it is difficult to believe that they were not, because their absence detracts from the beauty and harmonious proportions of a piece which is otherwise so skilfully made.

Another fragment from the Trois-Frères (Begouen, 1931) represents three birds; a stylized neck and head with a large beak forming the hook, with a goose on either side of the shaft, one deeply engraved with outstretched neck, the other in relief, looking backwards (fig. 3, no. 5).

¹ This was originally described by Piette as a three-headed swan, but H. Hubert (*Institut Français d'Anthropologie*, 2 April, 1910), gave the correct interpretation.

The specimens just described and figured give some idea of the variety and lively fancy shown in these weighted throwers, but they by no means exhaust the subject. The mammoth from Bruniquel (Piette, 1907, pl. V, no. 1), now in the British Museum, is one of the best known. The attitude here is unusual, because the shaft was in the prolongation of the trunk, the animal being figured, as it were, legs in air. The tail originally formed the hook, but this broke off, and a repair was done by inserting a hook in a socket in the back, where it was presumably held in place by some gummy substance.

Another well-known piece is Piette's so-called 'sphinx' from the Mas d'Azil (Piette, 1907, pl. LI, no. 1) afterwards recognized by Breuil as a grouse (Alcalde del Rio, Breuil and Sierra, 1912, fig. 234). and reconstructed by him as clinging to the back of the shaft with neck outstretched.

In a fine specimen from the Mas d'Azil (Breuil, 1909, fig. 8) two sculptured horse heads project from the shaft, which has a third, obviously macerated head in low relief on one side. This was included as a thrower by Begouen (1912), who believed he had identified the position of the hook. After handling the piece at S. Germain I am inclined to agree, though the break is smoothed, as though to tidy up the sculpture after an accident had rendered it useless as a thrower.

A type fairly often repeated is seen in the well-known ivory thrower from La Madeleine (Capitan and Peyrony, 1928, fig. 26) in which the animal, in this case a feline, crouches on the back of the shaft with legs thrust forward, the hook being placed below the hind-quarters. The exquisite bison from La Madeleine with head turned back and licking his side (Capitan and Peyrony, 1928, fig. 25) comes from a thrower of this type, as do a second bison from the same site (Capitan and Peyrony, 1928, fig. 27), a decapitated reindeer from Enlène (Begouen, 1912) (interesting because it is still daubed with red ochre), a large headless bison from the Mas d'Azil (Piette, 1907, pl. LXV, no. 6) this time broken accidentally, and two very mutilated horses from S. Michel d'Arudy (Piette, 1907, pl. XC, no. 1; pl. XCII, no. 6). In a variant from Isturitz (Passemar, 1944, pl. XXIX, no. 1) a decapitated horse is no longer merely crouching, but sitting down on the shaft. There is a considerable range of size and weight in these sculptures, the largest and heaviest being the bison from the Mas d'Azil, which must come from an unusually robust thrower.

Two throwers from Kesslerloch, which do not fit exactly into either of the main groups described above, exemplify the tendency of the Bodensee Magdalenian—a tendency not confined to spear-throwers—to produce special types, side by side with others which are identical with those of S.W. France. Fig. 1, no. 6 shows the upper part of a very solid thrower with a flat surface for the spear, and a big hook slightly polished by use (Schmidt, 1912, pl. XXXI, no. 9). Above a cirlet in relief the head expands, but owing to an extensive break it is not possible to know with certainty what was the exact shape of this portion. Two lines of *guilloché* run from the back of the cirlet up to the break, and the cirlet itself is extended in a rat-tail down the back of the shaft. The broken surface is considerably worn, as though the thrower had continued in use for some time.

The second thrower (fig. 2, no. 4) is in two pieces which were found by Merk and Nuesch in 1874 and 1893 respectively (Guyan, 1944). It was not until 1943 that H. Wanner discovered that they formed part of the same object. The thrower as reconstituted is broken at both ends, and the upper end is burnt, as were several of the horse heads from the same site. The hook, which shows definite signs of wear, is separated by a groove from the main shaft, only the rounded tip being detached. All this portion, including the flat surface below the hook, is elaborately engraved with hatching, and with rows of tiny

rectangles. The carving of the shaft consists of a stylized horse's head, with its muzzle pressing on the top of a second head, of which only the ears remain. It is probable that the shaft may have been decorated down a part of its length with a series of such interlocking heads.

It remains to examine two possible examples of the androgynous type from Isturitz (Saint-Périer, 1930, pp. 61-2) and Laugerie-Basse (Lartet and Christy, 1875, pl. B, XXI, no. 3). Fig. 3, no. 4 would be the upper end of such a thrower, carved to represent the forelegs of a horse. The shaft is broken short, but enough remains to show that it was grooved on both sides, with a pointed tongue at the head of the groove in one case, and a simple bar in the other. Saint-Périer suggests that this is a double-sided thrower, androgynous on one side and female on the other. The Laugerie-Basse specimen is not in the Lartet and Christy collection at S. Germain, so I rely on the excellent coloured plate in *Reliquiae Aquitanicae*. It represents a stout rod of antler 15 cm. long, broken at the base, with a rounded tongue-like upper end. At 6 cm. below the top begins a groove 10 mm. wide, at the head of which is a small blunt projection corresponding with the tongue in the Isturitz specimen. The rounded end of the shaft bends back rather sharply from the head of this groove, corresponding with the natural curve of the antler. Lartet and Christy describe this as a skin-dresser; subject to an examination of the original, I interpret it as a combined skin-dresser and androgynous thrower.

Bétirac describes as a possible female thrower the splendid staff surmounted by a jumping horse found by him in the Abri Montastruc at Bruniquel (Bétirac, 1952). If only there were a hook in the region of the horse's tail this would be a perfect specimen of the normal weighted thrower¹, with the typical expanded base pierced by an elliptical hole, but it hardly seems possible that a spear would hold in the narrow groove between the hind-legs, as suggested by Bétirac, especially as this would bring it on to the convex side of the shaft. Bétirac admits these difficulties, and invokes the theory of a ceremonial thrower, but this appears to me such a doubtful case that I have not included it in the inventory.

Leaving the descriptive for the practical side, we come up against a certain number of problems, and here I am greatly indebted to Monsieur Leroi-Gourhan, with whom I had a most stimulating discussion. Too many prehistorians have tried to explain apparent anomalies by the theory of ceremonial weapons—*propulseurs d'honneur* to borrow Péquart's phrase—and even Breuil has lent his weight to this opinion. Without denying its possibility—the Aztecs had votive and ceremonial throwers—I think it should only be invoked when a particular weapon quite obviously could not be used, and I do not think this is the case for any of those on my list.

It has been objected in the case of the weighted throwers that time and skill would not have been lavished on adding a purely decorative flourish to an object meant for hard use, which could so easily be broken or damaged; that the curve of the shaft would in many cases be an obstacle to laying and throwing a spear; that Palaeolithic throwers are often too small to be effective.

It is true that some of the carvings on these weapons are among the masterpieces of Palaeolithic chattel art, but it seems unlikely that so large a proportion (34 per cent of the total number of throwers) should be ceremonial objects. It seems therefore worthwhile

¹ Is it possible that there was originally a hook here, and that the break was smoothed away for aesthetic reasons, and the object kept for the sake of the carving, as seems to have been done for some of the figures from weighted throwers already described?

to ask whether the sculpture was in fact purely decorative, or whether, by weighting the head of the thrower, it did not make it more effective. I had asked myself this question before discovering that Begouen had put forward the same idea long before (Begouen, 1912). Leroi-Gourhan was at first doubtful, but later came round to the view that the added weight might possibly be of service in throwing a light spear. In effect, most modern throwers, such as those of the Australians and Eskimos, for example, are light in themselves, but are used with heavy spears whose weight balances the thrower. The bone spear-heads of the Magdalenian IV, on the other hand, are rather light, and apparently made to be hafted on to a relatively slender shaft, without the heavy bone foreshaft of the Eskimo type, and Leroi-Gourhan is willing to admit, quite tentatively, and subject to experiment, that in this case the weighted head of the thrower might compensate for the lightness of the spear. In this connection it is worth noting that some of the throwers found on Basketmaker sites in Arizona are weighted with stones which are lashed to the back of the shaft (Renaud, 1925).

As we have seen, all complete or nearly complete Palaeolithic throwers have a marked natural curve of the shaft, unknown in modern examples, which in extreme cases would mean that the spear was in contact with the thrower at the hook and at the base only. Leroi-Gourhan suggests that some of the more slender ones were straightened, but admits that this would be impossible in the case, for example, of the Gourdan thrower, (fig. 2, no. 1), in which the shaft has a diameter of 15-17 mm. Now there is every reason to suppose that the Gourdan thrower is functional; it is robust, not very elaborately carved, and the hook is slightly polished, as though by use. If in this case the curve, which is greater than in any other specimen, has not been an obstacle to use, there is no reason to invoke it for any of the others.

I come now to the question of size. Admittedly the Palaeolithic throwers are small; the longest is 33.4 cm. We have seen, however, that all the unweighted specimens in which the base survives were made to be lengthened by hafting. Breuil is convinced that all throwers with an elliptical hole at the base were also hafted, the hole being designed to take a peg which would secure it in the socket of a stout wooden handle. In this category would come the Gourdan thrower (fig. 2, no. 1), the Mas d'Azil ibex (fig. 3, no. 1), the eel from the Mas d'Azil (Piette, 1907, pl. LI, no. 2) and two shafts from Bruniquel (Carthailac, 1903, p. 141, fig. 45) and S. Michel d'Arudy (Piette, 1907, pl. LXXXIX, no. 2), which come from weighted throwers of the type with an animal perched on top. Leroi-Gourhan agrees with me in differing from Breuil in this matter. In every one of these cases the shaft is slightly expanded at the base, and the obtuse point with which it ends is never central. While such a hafting is just possible for the Mas d'Azil thrower, in which the base is relatively slender, it is most improbable for the others, and is quite impossible for the Arudy shaft which ends in a kind of plump paw.

If then we accept this type of base as being complete, and not meant for hafting, we get total lengths of 33.4 cm. and 28.5 cm. for the Mas d'Azil and Gourdan, that is within the range of modern throwers, though below the average. The eel from the Mas d'Azil (which may not be a thrower at all) is 21 cm. long, and the shafts from Bruniquel and Arudy would come from throwers with probable lengths of 24 cm. and 20 cm. respectively, and these are obviously well below the normal. In the Pitt-Rivers Museum at Oxford, however, there are some throwers from Central America, of the type with two finger-holes at the base, which are even shorter, so short indeed, that at first sight it is difficult to believe that they made any useful contribution to the length of the throw. It may or may not be significant

that among the Palaeolithic throwers it is the unweighted ones which were lengthened by hafting, and the weighted ones which tend to be short and rather robust. Leroi-Gourhan does not entirely exclude the possibility that the extra weight might compensate for the loss of length.

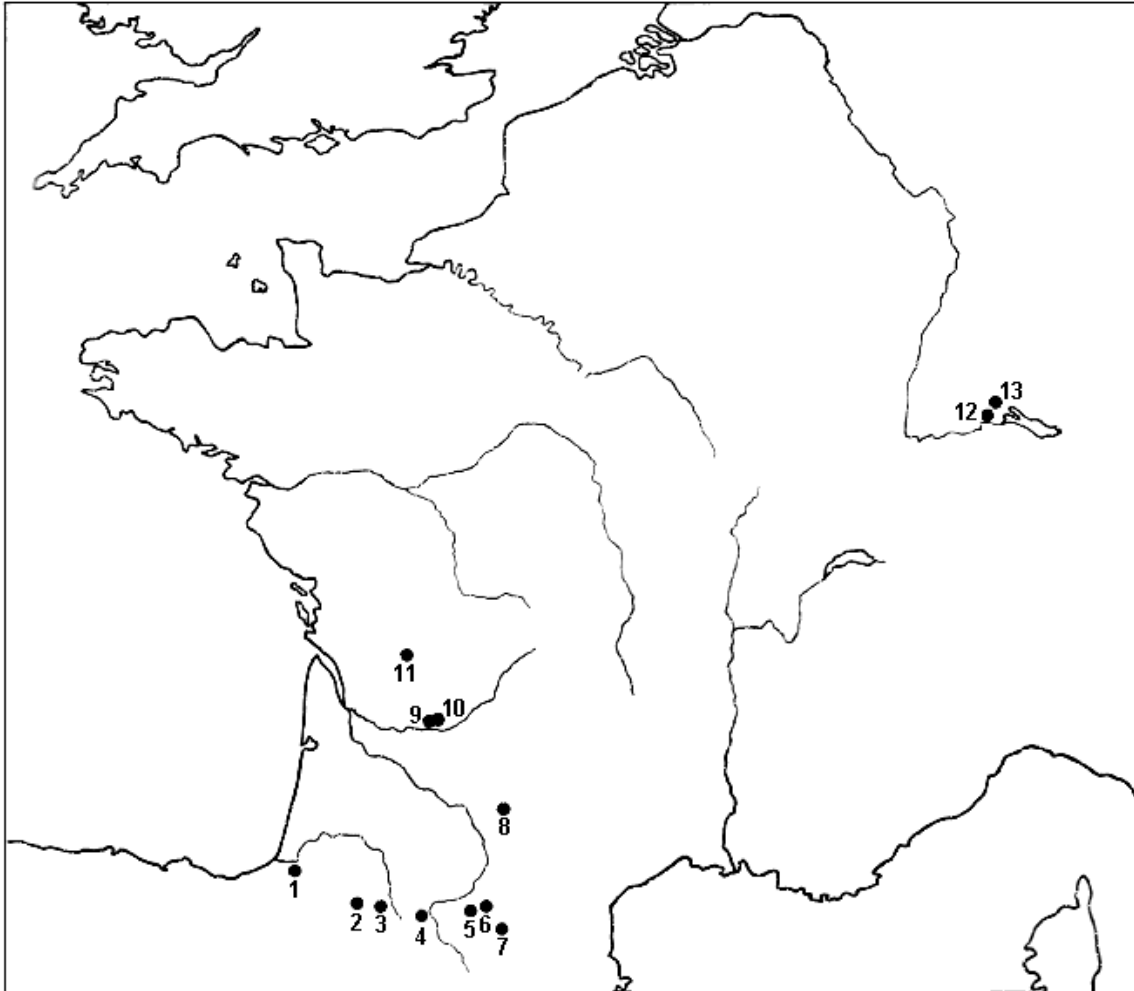


Fig. 4
Map showing distribution of Upper Palaeolithic spear-throwers

- 1 Isturitz; 2 Arudy; 3 Lourdes; 4 Gourdan; 5 Trois-Frères and Enlène;
6 Mas d'Azil; 7 Bedeilhac; 8 Bruniquel; 9 Laurerie-Basse; 10 La Madeleine;
11 Le Placard; 12 Kesslerloch; 13 Petersfels

The hole at the base of the shaft is often assumed to be for a loop of leather or string, but Leroi-Gourhan has an alternative theory. He reminded me that the spear-thrower depicted at Lascaux has a cross-bar at the base, forming a hand-hold, as in ancient Mexican throwers (Renaud, 1925), and he suggested that the elliptical holes in the Palaeolithic specimens were made to take a wooden bar. In the cases where the hole is close to the end

of the shaft, as at Gourdan, such a bar would presumably serve as a stop against the side of the hand, but in the Mas d'Azil thrower there are three holes, set higher up the shaft, and if the two lower ones were not rather close together it would be tempting to explain them as sockets for finger-pegs, as in some Eskimo throwers.

I have said enough to show that there are problems connected with Palaeolithic spear-throwers which cannot be solved by an armchair study such as this. There is room for someone with the necessary time and skill to make experiments with throwers modelled on the principal types described, that is, not only of the same size and shape, but having approximately the weight they would have had when the antler was fresh. I commend it as an alternative to the more arid discipline of chipping flints in the field of '*travaux pratiques*'.

I have to thank Abbé Breuil for allowing me to draw on his unrivalled knowledge of Palaeolithic chattel art and Monsieur Leroi-Gourhan for his helpful suggestions. My thanks are also due to the following for facilities given me in their respective museums; Monsieur R. Lantier, Conservateur-en-Chef, and Monsieur A. Varagnac, Conservateur, Musée des Antiquités Nationales, S. Germain-en-Laye; Dr W. U. Guyan, Director of the Museum zu Allerheiligen, Schaffhausen; Frau von Blanckenhagen, Acting Conservator of the Rosgarten Museum, Constance; Monsieur E. Peyrony, Conservator of the Les Eyzies Museum.

INVENTORY OF PALAEOLITHIC SPEAR-THROWERS (for distribution, fig. 4)

	<i>Unweighted</i>	<i>Weighted</i>	<i>Total</i>
S. Michel d'Arudy	1	5	6
Bedeilhac	-	1	1
Bruniquel	9	2	11
Enlène	-	1	1
Gourdan	6	-	6
Isturitz	3	1	4
Kesslerloch	8	-	8
Laugerie-Basse	3	-	3
Lourdes	1	-	1
La Madeleine	5	3	8
Mas d'Azil	4	6	10
Le Placard	4	-	4
Petersfels	1	-	1
Trois-Frères	-	2	2
	45	21	66

Animals represented: Horses, 29; Reindeer, 2; Deer sp., 3; Bisons, 5; Musk-ox, 1; Ibexes, 7; Chamois, ? 1; Mammoth, 1; Feline, 1; Birds, 5; Fishes, 5.

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