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Decorated piece of Rib Bone from the Palæolithic Levels at Gough's Cave, Cheddar, Somerset

By

C. J. Hawkes, E. K. Tratman and Rosemary Powers

Abstract. A piece of decorated rib bone from the Palæolithic levels of Gough's Cave is described. Experiments on the methods possibly used to produce the design and the purpose of the object are discussed. It was not necessarily a simple tally.

DISCOVERY

By

C. J. Hawkes and E. K. Tratman

The two authors began a systematic examination of the animal bones from the various excavations in Gough's Cave, the present show cave, on Nov. 30th, 1968. The material had been moved out of the original museum to a store some years previously. Most of the bone material had been examined by E.K.T. when a catalogue was made over the years 1952–53. Not all the bones were then examined.

The first box, selected quite at random, examined had in the top part several sheets of newspaper dated March, 1958. Inside these was a number of bones still encrusted with a sandy matrix. Amongst the bones was the rib piece and also a horse lower molar. The rest of the box contained exclusively animal bones from the Palæolithic levels and were all labelled.

Some of the cave guides were questioned about the provenance of the bones and they were shown the bones but not the rib piece and horse tooth. They were all in agreement that there were some put aside when the workmen laid the present concrete path through the cave. The manager, Mr. Gerald Robertson, checked the newspaper date against his diary of "operations". There is no doubt that the bone came from a recess on the right inside the entrance (area C of Donovan 1955, *fig.* 12), where some material had been left against the rock wall by the earlier excavators and there is no doubt that they came from well below the stalagmite floor that had sealed the Palæolithic/Pleistocene deposits in this area. Confirmation is offered by the sandy nature of the matrix on the bones which is that of the "conglomerate" or layer (3) of Donovan (1955) who noted that "a few flint implements and animal bones are said to have been found 'low down' in the excavations." None of the bones had been washed.

DESCRIPTION

(*Plate* 14A, 14B and *fig.* 20A, 20B.)

The rib piece is about 10 cm. long. It has along the superior and inferior edges on the curved side a long series of incisions arranged in groups with varying numbers of cuts in the groups. One end had been cut off and polished. It also bore incisions. The flat surface had almost continuous cuts near its margin and was also covered with an irregular lattice of fine lines. It appeared to be partly covered with ochre.

The find was considered to be so important that it was taken immediately to the British Museum (Natural History), Sub-Department of Anthropology for further examination, preservation and report.

With this bone was a lower molar of horse. The root had been partly pared away and the exposed interior portion bore several fine, transverse, incised lines. The tooth was blacker in colour than the usual run of teeth from the deposits and the root end seemed to have been polished.

REPORT FROM THE BRITISH MUSEUM (NATURAL HISTORY)

By

Miss Rosemary Powers

CONSERVATION

Most of the engraving was visible even before cleaning was attempted. There were also traces of red ochre, almost confined to the flat reverse side. Much of the sandy matrix was removed with a dental probe. Towards the broken end the surface of the bone adhered more closely to the matrix than to the rest of the bone. Therefore a small patch of matrix was left in place (stippled in *Fig.* 20A, the lightly stippled patch is where the bone surface came away with a pebble). The thin rub of red ochre on the flat side was more conspicuous over the areas of diagonal cross hatching, which appeared to extend all over the surface except in the damaged area. The convex side of the bone, which appeared polished showed no trace of ochre at this stage. A crack extending along the bone from the cut end showed signs of widening so the specimen was taken to the Palæontological Laboratory (Mr. A. Rixon) for treatment.

The bone was gently flooded with a thin solution of Alvar 1570 in I.M.S. and 10% diacetone alcohol, followed by a thinned emulsion of Polyvinyl acetate. No disturbance of the ochre resulted. On the contrary all the markings were made more visible including traces of ochre in the engraved lines on the convex side.

Moulds of the object were made (Mr. R. H. Parsons) and it was then photographed.

[It was photographed again in the Geology Dept. Univ., Bristol. Additional markings were made visible, Pl. 14.–Ed.]

EXPERIMENTS

The ochre colouration appeared to have been deliberately applied and not just be due to soil staining for it was much redder than the adherent sandy matrix. During the experiments a light dusting of ochre on the hands was found to help the grip and absorb grease, while also rendering fine incisions clearly visible as long as comparatively fresh bone was used. By inference the artist's hand may also have been coated with ochre.

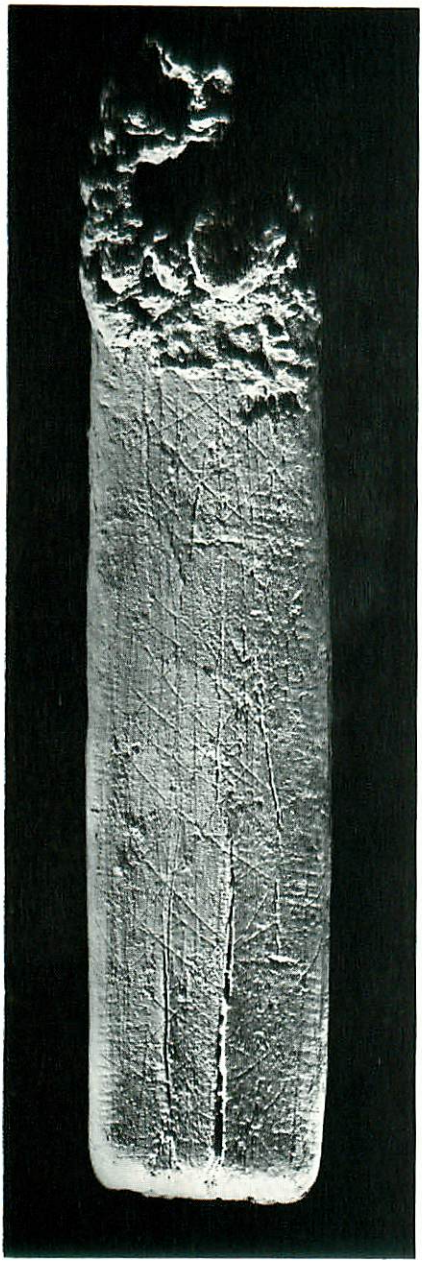
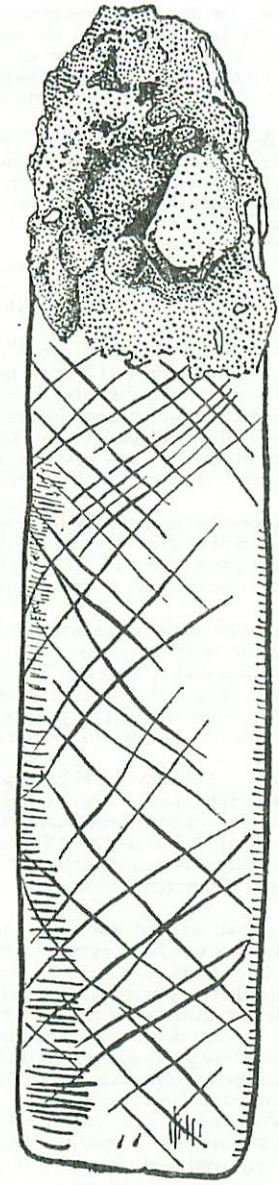


PLATE 14A

PLATE 14B

(Photograph: Robin Godwin



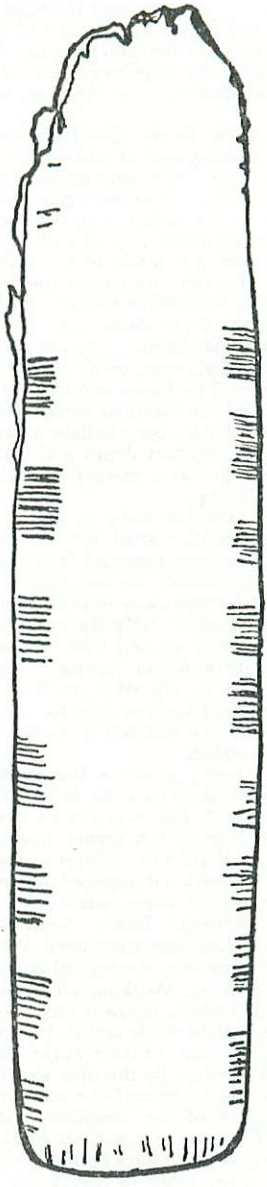


Fig. 20A. *Fig.* 20B.

It seemed probable that the bone had been chosen for its straightness from amongst the usual food debris. It also seemed likely that the depth and quality of the engraving would be strongly dependent upon the condition of the bone at the time of carving, especially upon the degree of surface weathering and fat content. So several bone samples, variously weathered, were engraved with a fragment of flint in imitation of the original object.

(1) RAW BONE. On Jan. 8th portions of rib from a "neck of lamb" were cut off before cooking, and as much tissue trimmed off as possible without risk of damage to the bone surface. They were enclosed in a tin with a perforated lid and buried just under the surface of the soil under a pear tree. Snow fell in the first weeks of Feb., and the spot was under frozen drift for about three weeks. Examination in March showed a thick growth of fluffy mould, (unidentified), so the tin was reburied. On May 1st it was taken up and an attempt made to clean the bones, but the periosteum was still intact and adherent to the bone and, as in the fresh state attempts to strip it off resulted in a rough greasy surface impossible to engrave. On such fresh, raw bone, even if a smooth surface is obtained, the grease causes the tool to skid out of control, slashing the bone.

(2) SCALDED BONE. On Feb. 10th the bones from a "slipper of bacon", which had been scalded, were used without further treatment and provided a good match to the specimen. The bones consisted of the distal ends of the floating ribs. The smooth parts provided an excellent working surface on which there was little tendency for the tool to skid or for the bone to flake away from the edges of the incisions. The lines produced were of fairly constant depth and attempts to deepen them by using extra force or by recutting in the same place produced similar V-shaped doubling to that seen on the specimen (*Pl.* 14).

On the experimental piece the writer found it impossible to space the lines as closely as did the palæolithic artist, but this was a difference in skill and not due to any limitation in the experimental material. The slightly roughened parts of the rib towards the free end were less suitable for extremely fine work and it is noteworthy that they appear to have been trimmed away in the original.

The attempt to copy the cross-hatching of the original specimen was particularly revealing. It had seemed that this was casual because of its irregularity, but in this experiment it was found that the effect was produced by a slight greasiness. The tool had little tendency to slip when cutting across the grain, and cuts along the grain were virtually splits. Diagonal cuts though easy to produce were difficult to control. Their general direction could be kept constant but irregularities of spacing and sudden swerves were unavoidable.

(3) SCALDED, SLIGHTLY WEATHERED BONE. During the snow in Feb. bone scraps were thrown out to feed the birds, and one of these scraps inadvertently provided the best match of all. This was a short section from the middle of one of the bacon ribs. The surface was slightly less greasy though not visibly weathered and distinctly lighter in colour than before. The slightest scratch showed up well, and when ground up hæmatite was rubbed in with a dampened or greasy hand it clung to the engraved lines while barely tinting the smooth bone surface.

(4) WEATHERED BONE. Various recent bones from surface soil and a piece of known Mediæval date were used. Weathering produces a soft layer even on previously dense hard bone (e.g. the central part of a tibia of a large animal), which had previously resisted engraving. Working such a layer, especially if it is stained a different colour from the harder bone below is very like working modern scraper-board and this technique was known to Palæolithic artists. It accounts for their constant depth of lines and cut away backgrounds is some of their works, though, when weathering has progressed further, no such layering exists. By the time weathering has progressed to this stage the whole of the dense bone can be carved like marl and marl was carved at Kostienski.

The speed of the weathering process varies enormously with conditions and so probably does its exact nature. Most bone in contact with soil shows its effects fairly rapidly and the bone soon becomes suitable for the finest engraved work. Rubbing ochre onto such bones tends to colour the bone all over and any natural colour contrast is obscured. But with the specimen only a very thin patina, if any, existed and all the engraving is shallow. On the smoother side the ochre adhered only to the engraved areas.

(5) COOKED BONE. Freshly cooked bone tends to be a little too slippery and hard to encourage engraving, but is indistinguishable after weathering except that overcooking may weaken it.

(6) ROLLED BONE. Beautiful ivory-like pieces of dense bone may be picked up on the sea-shore, for the poorer quality bone has been abraded away. These are excellent

for engraving and carving, and a rub of damp ochre shows up the work well, though it may tend to rub off unless a little grease is added. The specimen had not been rolled and so this is irrelevant.

CONCLUSIONS

The experimental evidence supports the theory that the specimen had been scalded or lightly cooked so as to loosen the periosteum and it had then been left unburied before it was selected for engraving perhaps because of its straightness. These findings agree with it being normal food debris. The writer's experience suggests that the actual engraving took only a few minutes and that the artist was extremely skilled in his medium.

The question of use may be discussed but no precise conclusion can be drawn. There is no significant abrasion, which would have obscured the markings, unless it was on the damaged end. The other and neat end, cut at right angles to the parallel sides took time and effort more consistent with long continued use than otherwise. The general appearance of the object reminds the writer of her cheap 6-in. pocket rule, which has proved unexpectedly useful on a number of occasions and which has far more uses than the makers imagined. On this analogy it seems an obvious companion to the pocket-knife (flint blade) of the hunter/craftsman. A type of blade very common amongst the collection from the site.

The engraver might use it for spacing barbs or bindings, e.g. on his harpoons, especially if their spacing signified his ownership. Or the groups of lines, all over five, might be used for simple calculations. Several groups seem to form a sort of sum. Regarded as blocks they could have served as a rough measure finer than finger-widths and of the right order for craft work. The parallel sides and the end cut at right-angles would be useful in a geometrical sense. They could serve as a frame for some sort of netting or weaving, in which case the markings would be appropriate to the task, indicating the spacing required. The existence of such nets has long been postulated, mainly because of the shell bead-work on the Grimaldi burials, and they have obvious use in fishing.

Alternatively it might really be a hunter's record or a genealogy. It might have been thrown like a dice, the red and white sides having different meanings and there is a slight similarity, probably fortuitous, between the ochre pattern on the specimen and that on some of the Mas d'Azil pebbles.

Primarily because of the mental laziness implied in labelling everything unexplained as a "ritual object" the writer prefers to regard the piece of bone as a palæolithic pocket rule.

The matter of the distribution of specimens similar to this one has been deliberately not discussed. This is something for a further paper.

Disposal

The specimen is now, Jan 1970, in the Cheddar Caves Museum at Gough's Cave, Cheddar. Casts are in the British Museum (Natural History), City Museum, Bristol, University of Bristol Spelæological Society's Museum, University Road.

REFERENCE

Donovan, D. T. 1955 The Pleistocene Deposits at Gough's Cave, Cheddar, including an Account of Recent Excavations. *Proc Univ Bristol Spelæol Soc.* **7** (2), 76–104.