

ART. IX.—*Report on the Exploration of a Cave at Haverbrack, Westmorland.* By J. WILFRID JACKSON, F.G.S. (Assistant Keeper, Manchester Museum).

Read at Carlisle, April 10th, 1913.

THIS communication deals with some preliminary investigations made last September at a small cave on Haverbrack Bank, near Dallam Tower, Westmorland.

The diggings were conducted under the auspices of this Society, and I wish here to record my sincere thanks for their generous support.

The cave, which partakes of the nature of a "sink" or "pot-hole," is situated in a little dell on the south-west slope of Haverbrack Bank, and is about 200 feet above sea-level. It was first pointed out to me by Mr. Laurence Nanson, the agent for the Dallam Tower Estates, to whom I am indebted for obtaining permission from Sir Maurice Bromley Wilson for excavations to be made.

The opening of the cave, which is on the ground level, was masked by brambles and bracken, and few people knew of its existence, though to some of the older residents it has been long known as "The Fairy Hole." Connected with it are the usual stories of mysterious passages leading underground for several miles. To the present day it is stoutly asserted by some of the Storth residents that a dog which was put into the cave came out eventually at a small cave by the river Bela, near to the old corn mill at Beetham, which lies about a mile to the south-east.

Operations were commenced by lifting off two heavy limestone covers which partly masked the entrance. This disclosed an opening measuring approximately 5 feet

by 3 feet. The shaft below was filled to within 3 feet of the surface level with clay and blocks of limestone. There were also a few blue cobbles of distant origin.

The sides of the shaft down to the surface of the clay were approximately vertical, and some 3 feet apart, but in the course of digging the east wall was found to open out considerably, until the shaft attained a maximum width of 12 feet. In general appearance it reminded one forcibly of the shaft at the Dog Holes cave on Warton Crag.

This uncommon form of entrance rendered the work of excavating an arduous task, as the material had to be hoisted to the surface by means of a rope and buckets, and comparatively slow progress was made, especially when the deeper material was reached. A depth of 17 feet was eventually reached in the southern corner of the cave before excavations finally ceased, and at this depth the bottom of the shaft had not been reached, nor had any lateral passages been exposed.

In the course of digging out the clay and stones a surprisingly large collection of animal remains was brought to light, including the bones of horse, ox, sheep, goat, pig, dog, and wolf. Next to those of the dog, the remains of pigs constituted the largest proportion.

The remains found in the first foot or so of the deposit were scanty and appeared to be of no great antiquity; they included, along with animal bones, a fragment of blue glass and a curious type of iron hinge of fairly large size. A little deeper down an interesting find was made in the shape of part of the neck of a glazed pot, which provided a clue to the age of the accumulation. This fragment is described on a later page. Two small highly-oxidised iron objects were also met with here, but these are too imperfect for accurate determination.

Below this horizon animal bones were more abundant, and continued so to the greatest depth reached. No

further remains of pottery were encountered, the only addition to the list of objects being some shells of the common cockle.

The complete remains of at least five wolves were discovered, some of the bones being remarkable for their large size. One or two of the skulls were in a fairly perfect state of preservation; others, however, owing to their fragile condition, were somewhat broken in the process of extraction from under the large stones. The same remark applies equally to the remains of the dog, these representing a total of at least fifty individuals.

DESCRIPTION OF THE REMAINS FOUND IN THE CAVE.

(a) POTTERY.

The fragment of peasant pottery found a little distance below the surface is of somewhat coarse make and covered exteriorly with a yellowish-brown glaze. At my request Mr. Wm. Burton, M.A., F.C.S., kindly forwarded the specimen to Mr. Hobson of the British Museum, who reports as follows:—"From the evidence of the pieces in the British Museum which can be reasonably dated, I should classify this fragment as Tudor (16th century). So far as technique is concerned, of course, it might be earlier or later, but the style of the rim and the way in which it has been formed happen to be reasonably conclusive."

(b) ANIMAL REMAINS.

Horse: Several limb-bones, as well as teeth, and a broken lower jaw. Comparison clearly indicates that three or more individuals are represented, and all of different types. A right femur measuring 350 m/m in length appears to indicate an animal of the size of the Exmoor pony; on the other hand a type approaching very closely to the New Forest pony is represented by a right tibia measuring 323 m/m; a metatarsal, 259 m/m;

and metacarpal, 216 m/m. There is still further indication of an even larger animal than the above in the lengths of some of the bones, for example, a metatarsal measuring 270.5 m/m, and a metacarpal, 225 m/m; while from the lower jaw, with a teeth area of 150 m/m, one would infer an animal intermediate in size between the Exmoor and New Forest ponies.

The largest animal does not appear to have exceeded $14\frac{1}{2}$ hands in height.

Three instances of breakages occur amongst the bones, one being that of a femur, another that of a tibia, and another of a radius. All are old fractures and are such as might take place by a horse getting fast in one of the numerous clints in the limestone.

Ox: This animal is represented by a pair of lower jaws and the left upper maxillary of an adult; the imperfect lower jaw of a calf, and by several adult limb-bones.

The lower jaws of the adult are of the five-toothed variety, described by Professor Meek* as a new species of *Bos* (*Bos sylvestris*), represented to-day by the Chillingham herd. The teeth area in the Haverbrack example is 126 m/m. There are slight traces of alveoli for the first premolar. The accompanying upper maxillary is also characteristic of this form, having a teeth area of 127 m/m. The last upper molar, however, possesses a rudimentary internal column, this column being entirely absent in the form described by Meek.

All the limb-bones compare favourably in their measurements with those given by Meek for the Chillingham cow (*op. cit.*, p. 106), and one or two of the bones show evidences of gnawing.

Goat: This is represented by a pair of small horn-cores attached to part of the skull, the cores rising almost

* Report of the 1910 Excavations at Corstopitum; *Animal Remains*, 1911, p. 103.

vertically. Associated with these were a pair of lower jaws (teeth area 68 m/m) and a pair of upper maxillæ (teeth area, 67 m/m). The width of the palate, opposite M_2 , is 35 m/m. Two metacarpals measuring 97 m/m in length may also belong to this animal.

Sheep: Numerous jaws of this animal were found, but mostly belonging to lambs. The horn-cores and cannon-bones appear to indicate a small breed not unlike the Romano-British type met with at Dog Holes, Corstopitum, etc. In all probability they are referable to the small "fell-sheep" of the present day.

Pig: Young animals represented by their jaws containing milk-teeth were very numerous among the remains; their limb-bones, however, were decidedly scarce. One adult animal is represented by a pair of lower jaws. The teeth are well worn, and the small size of the canines, or tusks, indicates that it belongs to the domestic breed and not to the wild form. The molar area measures 105 m/m.

Wolf: As mentioned previously, at least five individuals of this animal are represented in the remains from this cave. Judging from their limb-bones, they must have been strongly developed creatures and far superior in size and build to the animal identified as wolf from Helsfell fissures (now in the Kendal Museum). The tibiæ, or shin-bones, range in length from 244 to 275 m/m, while the femora, or thigh-bones, average about 264 m/m.

The following measurements of one of the most complete skeletons found at Haverbrack may be of some value for comparison in future discoveries, since we know so little of the actual size of the wolves so abundant in England in mediæval times. This skeleton is that of a male wolf and the dimensions of the various bones are as follows:—

THE EXPLORATION OF A CAVE AT HAVERBRACK. 267

	Extreme length.	Proximal end.	Distal end.	Least width of shaft.
Femur	264.5	56	45×49.5	18.5 m/m
Tibia	268	51×53	31.5×23	18 m/m
Calcaneum ..	64.5	23.5×28	—	— m/m
Humerus	237.5	44×59	47×38	18 m/m
Radius	236	25×17	34.5×19.5	— m/m
Scapula	189.5	—	—	— m/m
Innominate ..	210	—	—	— m/m
Penial Bone ..	104 (circa)	—	—	— m/m
Sacrum*	64.5	Greatest breadth: 63.5		

The measurements of the skull and lower jaws of the above animal are given below in millimetres, together with those of one or two of the other skeletons discovered.

Skulls.	Complete Skeleton.	Others.
(a) Length from occipital protuberance to tip of pre-maxillary	252	—
(b) Length from occipital protuberance to centre of a line joining the post-orbital processes of the frontal bone	112	121
(c) Length from basion to alveolar point	230	—
(d) Least width of frontal bone behind post-orbital processes	50	46
(e) Maximum width between zygomata	124	—
(f) Maximum bi-orbital width	78	70
(g) Minimum inter-orbital width ..	62	50
(h) Height from lower margin of occipital foramen to highest point of sagittal crest	79	72
(i) Length occupied by molars and pre-molars	80	84.5
(j) Length and breadth of carnassial tooth	18×10.5	20.5×11

* A sacrum of another and much larger animal is peculiar in being composed of four fused vertebræ instead of the usual three: its length is 76 m/m; breadth, 73 m/m (circa).

Lower Jaws.	Complete Skeleton.	Others.				
		1.	2.	3.	4.	5.
(a) Greatest length from back of condyle to tip of inferior maxilla	187	164	161	167	160	
(b) Height from summit of coronoid process to lowest point of inferior maxillary immediately beneath it..	68	63	—	59	59	
(c) Least depth of inferior maxillary behind molars	36.5	33	32.5	30	28	
(d) Least depth in front of premolars	23	20	22.5	18	19	
(e) Length occupied by molars and premolars	88	88*	80	73*	84	
(f) Length of carnassial tooth	23.5	24	23	22	22.5	

Dog: Remains of this animal were extremely abundant in the Haverbrack cave. They represent dogs of various sizes, and it is a somewhat difficult matter to arrive at definite conclusions as to breed owing to our imperfect knowledge of the many varieties met with in this animal.

From the limb-bones and the lower jaws (the skulls were mostly broken) it is evident that animals as large as the Black Retriever and in some cases even larger are represented, though it is by no means certain that they belong to that variety. On the other hand, some represent smaller dogs of the Terrier type.

On the whole it seems preferable simply to give a few particulars as to measurement, leaving the question of breed for future investigations.

The limb-bones selected for measurement give the following dimensions:—thigh-bones, 136 to 155 m/m in

* Nos. 1, 3, 4 and 5 are pairs. No. 4 is without traces of the first premolar in the right jaw (recorded occasionally in wolf). No. 2 possesses an extra molar behind M₃.

length; leg-bones (tibiæ), 158 to 218 m/m; humeri, 132 to 199 m/m; radii, 141 to 217 m/m.

The measurements in millimetres of a selection of lower jaws and of two skulls are as follows:—

MEASUREMENTS TAKEN AS IN WOLF.

Lower Jaws.	1.	2.	3.	4.	5.	6.	7.
(a) ..	87	92	105	112	120	132	126(?)
(b) ..	31	38	35(?)	—	41	48.5	46
(c) ..	15	19	18	21	23	25	22.5
(d) ..	12.5	14.5	14	16.5	18	18	16.5
(e) ..	48	53	59	59	67.5	70	71

Nos. 1, 2, 5 and 6 of above are pairs.

No. 1 is extraordinary in being without the second and fourth premolars and the third molar in both jaws. In No. 2 the third molar is absent; the second molar extra large, and the fourth premolar slightly oblique. In No. 3 the second premolar is missing, and in Nos. 4 and 6 the symphysis is fused, the first premolar being also absent in No. 4. In No. 7 the second and fourth premolars are absent. Many of the other jaws also show similar abnormalities.

MEASUREMENTS AS IN WOLF.

Skulls.	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
No. 1 ..	161	81	142	37	93	44	34	55	58.5
No. 2 ..	178.5	88	160	38.5	—	51	37	56.5	61.5

In No. 1 all the incisors and one or two premolars are missing. Lower jaws No. 5 probably belong to this skull.

THE EVIDENCE AS TO AGE.

The fragment of pottery described above affords a fairly satisfactory datum-line upon which conclusions can be based, as, with the exception of those of a fairly recent pug-dog, all the bones were met with below this horizon.

No evidence has been obtained, so far, showing the cave to have been used for human habitation, as have so many other caves in the immediate neighbourhood, viz. :— Dog Holes, Badger Hole, and Fairy Hole, Warton Crag ; Kirkhead and Capeshead Caves in Cartmel, etc. This, however, was only to be expected, since the excavations have not, as yet, disclosed a suitable lateral passage such as would be chosen for habitation by cave-dwellers.

The obvious conclusion appears to be that this portion was a wolf-den at some period prior to the sixteenth century.

With the exception of the wolf, and possibly the ox,* all the other remains belong to those of domestic animals, even the remains of one or other species of deer are absent. This latter is somewhat surprising, considering the fact that deer roamed through the forests of Lancashire, Westmorland, etc., up to the period of disafforestation by Henry VII. early in the sixteenth century, after which time the herds were enclosed in the various parks.

The large number of dogs represented is, to some extent, surprising, and has given rise to much local discussion, many of the inhabitants asserting that they are due to stray dogs being shot by keepers and dropped into the hole. This somewhat feeble explanation, however, can be at once dismissed as untenable, both on the evidence of age and the number of individuals represented. It seems more reasonable to look upon at least a fair proportion of them as the result of having fallen victims,

* It is possible that this animal was of the wild variety.

at different times, to their fiercer and stronger foe—the wolf. Indications on the eastern wall of the cave also seem to point to a large portion of this wall having fallen in at some time, and the position in which some of the remains were found indicates that this disaster overwhelmed both the wolves themselves and their pursuers.

As pointed out by Macpherson, in his *Fauna of Lakeland* (1892), it seems altogether impossible to find any information as to the prevalence and date of extinction of wolves in Westmorland, etc. He seems to think that probably the wolf had become rare, if not extinct, in Lakeland by the end of the thirteenth century.

Harting, in his *Extinct British Animals* (1880), states that some time between A.D. 1485 and 1509, during the reign of Henry VII., it is probable that the wolf became finally extirpated in England, although for nearly two centuries later it continued to hold out against its persecutors in Scotland and Ireland. That it was rare if not quite extinct, in England about this time may be inferred from the circumstance that little or no mention is made of it, either in this or any subsequent reign. It is probable that these northern parts might yield some of the latest specimens in England.

In Stockdale's *Annals of Cartmel* (1872, pp. 152-160), is to be found a modern poem relating the death of the last wolf on Humphrey Head at the hands of Sir John Harrington, who appears to have resided at Raisholm Tower about the end of the fourteenth century.