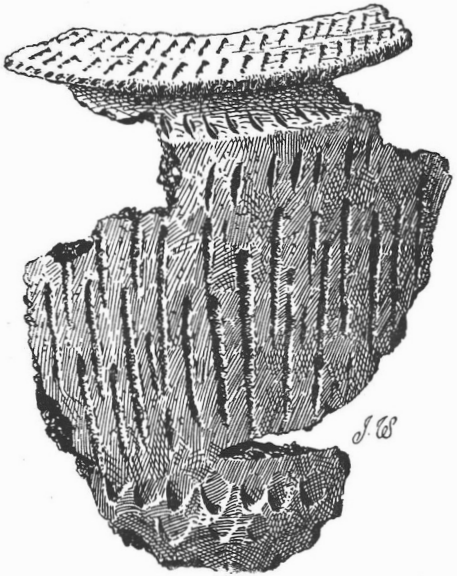


FIG. 3 (½).

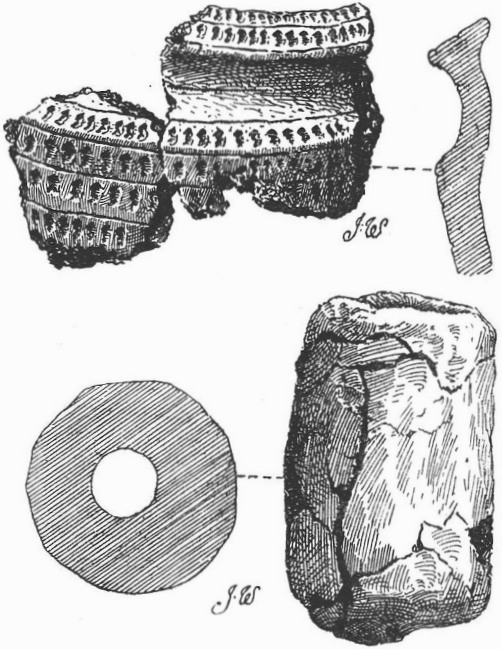
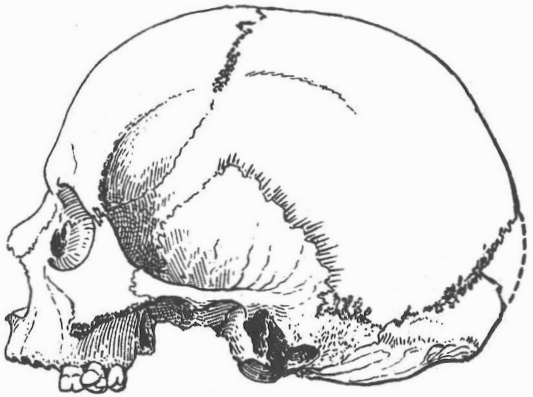
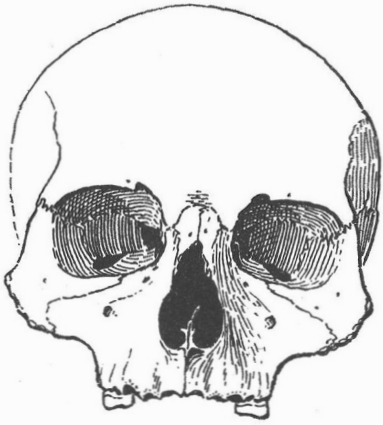
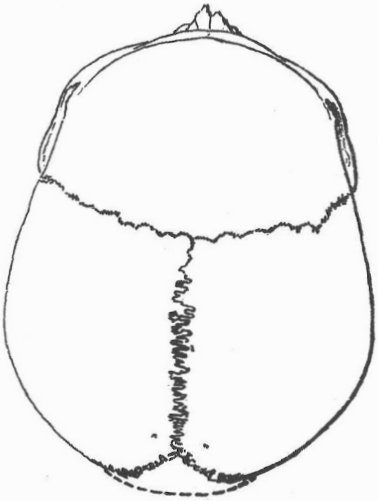


FIG. 1 AND 2 (½).

FRAGMENTS OF POTTERY FROM RAINS CAVE, LONGCLIFFE.







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SKULL, RAINS CAVE.

On Rains Cave, Longcliffe, Derbyshire.

(*Continued from Vol. XIV., page* 228.)

THIRD REPORT.—THE POTTERY, AND THE HUMAN AND ANIMAL REMAINS.

By John Ward.

THE description and general results of the systematic excavation of this cave from November, 1889, to March, 1891, have been too fully set forth in previous reports (Vol. XI., page 31; and Vol. XIV., page 228) to need further amplification. The present paper will be confined to several details only (as indicated in the heading) of this excavation, which, for want of room, could not be particularized in the second report. It is almost needless to say that it will pre-suppose some acquaintance with that report, particularly with those parts of it relating to the successive uses to which the cave has been put by man. A brief summary of this succession will be helpful.

The lowest and oldest deposit obviously connected with the presence of man, that was discovered, was a dark carbonaceous soil highly charged with animals' bones and fragments of pottery. Many of the bones were scraped and hacked, and still more had been broken when in a fresh condition. These and other points indicated that this layer was ancient refuse, and that it was accumulated when the cave was used as a dwelling-place by man (Vol. XIV., page 243).

After an interval, this was followed by a brief period during

which the cave was used as a sepulchre. The few bodies that were then buried were laid in shallow graves—mere depressions, in fact, reaching as a rule to the above-mentioned Refuse Layer. This brought about a curious commingling of human and animal bones, which at first sight suggested cannibalism (*Ibid.*, page 244).

After another uneventful interval the cave was very briefly used again as a dwelling. Although the relics of this occupancy were very slight, they furnished fair evidence that one of the tenants was a flint-knapper (*Ibid.*, page 248).

Yet another pause, at the end of which the cave was again used as a cemetery. Some, at least, of the new corpses were laid in graves deep enough to reach the Refuse Layer; and in digging these graves the bones and other objects of both sepulchral periods were jumbled together with those of that stratum, and of that of the flint-knapper, which, of course, was cut through in the process.

From this time until the Rainses commenced their operations in 1888, the floor does not appear to have been disturbed, consequently, the contents of the layer that accumulated in the interim had, in the aggregate, a character peculiarly their own (*Ibid.*, page 247). During this stretch of time the cave was not put to any lengthy definite use by man, probably not more than as a shelter in storms during hunting expeditions, or as a hiding-place in times of danger.

THE HUMAN REMAINS.

The human bones were by no means evenly distributed. During the excavation of 1888, a very large number were found. These were mostly in the right hand region of the cave, and, of course, at no great depth. Among them, were the fragments of at least six different skeletons, there being lower jaws, entire or in part, for that number. The positions and circumstances of these remains were not noted, but there are clear proofs that some of them related to interments of the earlier sepulchral period: how they came to be where they were, will be explained shortly.

Of the many human remains brought to light during the

systematic excavation of 1889-91, very few exhibited any signs of lying in anatomical relationship; indeed, only one set of bones could be said to have undoubtedly shown this. They were those of a skeleton uncovered on March 22nd, 1890, in the central region and partly in the Refuse Layer. The bones of the lower parts of the trunk and those of the legs were easily followed up, but those of the upper parts were confused and lost in the general maze of human and animal bones. An upper and lower jaw, an atlas, a radius, and many ribs were found where they were expected, but no trace of the rest of the skull and the arm-bones. Still, enough remained to show that the corpse had been laid in the usual barrow attitude, *i.e.*, on its side (in this case, the left) with the knees drawn up, the head being towards the entrance of the cave. The tibiæ of this skeleton, like all others found in the cave, exhibited the peculiar flattening known as platycnemism, said to be due to the free play of the muscles when the feet are untrammelled with rigid soles or sandals.

As already stated, the human remains were by no means evenly diffused. The portions of the cave where they were most prolific, were the central region near the back, and, as just indicated, the right-hand region a little more forward—the chief part excavated in 1888. Those of the former region were most numerous in or near the Refuse Layer; those of the latter were more evenly distributed, and apparently (to judge from the large quantity found in 1888) were most numerous near the surface. A considerable number of human bones were also found in the small cave at the back (Chamber 2) - the one described on page 241 in the last Journal. This chamber, it was noticed, was almost filled up to the roof with stones, which obviously had slipped down from the front or large cave; and there is no doubt that the bones found their way thither in the same manner, there being no evidence that it ever was used as a burying place. When graves were dug in the front cave, it would be an impossibility to prevent much of the removed *débris* rolling down the slope into this chamber, and part of this *débris* would consist of the bones of earlier interments.

The confusion wrought by later interments was greater than the reader perhaps imagines. It was not merely the case of *an earlier set* being disturbed and displaced by *a later set ;* but as the interments of each set—each period—were themselves successive, every new grave must have worked havoc with all the earlier interments which happened to be in its way. In such a process, not only would fragments of early interments be brought up to the surface and left there, but as frequently they would be buried again in a subsequent grave, and thus be transplanted to their old level, but in a different place.

"Thus far," the reader will hint, "you may have proved the sepulchral origin of these bones ; but how do you prove the two eras?" We had very fair evidence for two eras. It will be remembered that in the right hand region there were several thin seams of stalagmite, and a patch of charcoal which we identified with the flint-knapper's fire. For a distance of two or three feet from the cave side these seams were intact ; but beyond that limit they were broken up, and their *debris* were found scattered above and below their original level. Only one explanation is feasible for this displacement: the seams had been broken through in the process of grave-digging. These graves, then, were more recent than the formation of the stalagmite ; therefore the human remains for which they were dug were also more recent. But it so happens that human bones and potsherds of sepulchral vessels were found immediately below the *intact* stalagmites. Even those readers who have no geological knowledge will readily perceive that these objects must have been placed in these positions previous to the formation of these seams. Thus we have the relics of two sets of interments, and the interval was sufficiently long to allow of several seams of stalagmite being formed—always a very slow process—and the accumulation of a considerable thickness of soil.

We can, however, build up a much more detailed history than this. Nothing at all approaching to a complete skeleton was found under the stalagmites ; and the same applies to the pottery, only scattered fragments being found. Indeed, there was no

evidence at all that interments had been made so near the cave side: the ancient men would, for convenience sake, choose more central spots for this purpose. On the other hand, there were ample proofs that these objects related to interments originally made nearer the middle of the cave, and disturbed and scattered within the earlier sepulchral period. The fragments of Skull E proved this in a remarkable way. Some of them were found under the stalagmites of the right region; some in the central, at various levels; while a portion of the frontal was so considerably above the seams of stalagmite, as to have been turned up in the superficial diggings of 1888. The testimony is clear enough. The first resting place of the body to which this skull pertained was somewhere in the central region. Then came the burial of another body; in making the shallow depression for which, the bones of the former were disturbed, and many of them thrown out with the soil and left scattered around the new grave. May we not infer that the interval between these two burials was so long that the mourners of the second had no interest in the deceased person of the first? That the interval was considerable, has fair support from the evident state of the skull at the time of the second burial. It had been buried sufficiently long to readily fall to pieces, and in so doing, exhibited the fractured edges usual to bones which have lost their gelatinous matters. Thus far we are still within the earlier sepulchral era, and for anything we know, these bones may have been disturbed again and again before its close. After a much longer interval, during which the stalagmites were deposited and the flint-knapper made the cave his temporary home, graves were again dug; and in digging one of these, one fragment, at least, of our skull was brought up from below the stalagmites to the then surface, and left vertically above its fellow fragments under the undisturbed stalagmites.

The testimony of the fragments of vase, shown in Fig. 1., was equally to the point. A fragment or two were found *below* the stalagmite seams, others *above*, and another near the surface about the middle of the cave. The latter was covered with a crust of stalagmite; and as no such deposit has ever been formed

in that part of the cave, it is clear that it must have previously lain, *as a potsherd*, elsewhere. It is by such little details as these that the history of a cave is built up.

The fragments of Skull E failed to reconstruct into more than an imperfect calvaria, the face and basilar parts being lost or not identified. The left half of the frontal and all the right temporal are also missing, and the occipital is much broken. The tabular bones generally are thick, but are not very dense. The general outer surface is much decayed, and to a great extent the glossiness of the inner surface has disappeared by the same cause. The mastoids and the angular processes of the frontal are large and rugged. The sutures are more often open, than not. That known as the lamdoidal is extremely intricate ; and the sagittal but little less so. The general contour is rounded, fairly well filled, and typically dolichocephalic. The horizontal outline is an elongated and symmetrical oval, closely resembling that of the Harborough Rocks Skull, D 4 (Plate III., Vol. XII. of this "Journal") except that the present one is more full and rounded in front. The side view presents a low but vertical forehead, with moderately developed superciliary ridges. The rest of the curve is very similar to that of Skull D 5 (Plate IV. in the same volume). Viewed from behind and before, the calvarial vault is seen to be shallow and slightly carinated ; the parietal eminences but slightly developed ; and the sides, vertical, hence parallel. Owing to the extremely broken condition of this skull, only a few measurements can be given, and these must be accepted as only approximately correct. [See on next page.]

Fragments of at least two other calvaria of similar thickness and character were found scattered in the Refuse Layer, and, presumably, both were of the earlier sepulchral period. Those of one of them were blackened by fire, one fragment being so much burnt as to be partially calcined. This is no proof of cannibalism, nor even of a cremated interment, for in either case we must surely have found some fragments of the rest of the skull or of the bones of the trunk and limbs, also burnt. We know that fire was a frequent concomitant of prehistoric burials,

	Skull E.	Skull F.
I.—Measurements of Calvaria (in inches).		
Extreme length from supra-orbital point	7·5	7·25
Do. do. glabella	7·75	7·36
Extreme breadth	5·4	5·58
Vertical height		5·5
Do. to nasal suture		2·52
Basi-cranial axis		3·92
Bi-zygomatic breadth		5·13
Circumference		20·45
Frontal arc	5·1	4·93
Parietal arc	5·2	4·4
Occipital arc		5·1
Total longitudinal arc		14·5
Base line		5·25
Least frontal width		3·85
Greatest frontal width		4·55
Greatest occipital width	4·56	
Measurements from auditory meati:—		
Alveolar radius		6·75*
Radius to nasal suture		3·54
Bregmal radius		4·57
Extreme parietal radius		4·68
Opisthiac radius		1·6
Bregmal arc	12·8	12·30
Parietal arc	13·5	13·10
II.—Measurements of Face.		
Length of face (naso-alveolar line)		2·59
Basi-subnasal line		3·6
Basi-alveolar line		3·71
III.—Indices.		
Cephalic index	72·0	76·96
Do. from glabella	69·67	75·8
Facial angle to nasal spine		72·0°
Do. to alveolar border		70·50°

apparently with a view to purify or consecrate the grave before depositing therein the corpse. It might, therefore, have happened that the exposed bones of older interments were occasionally charred by this means, and this, probably, is the explanation of the present example.

The only remaining skull to be described is Skull F, the most perfect hitherto found in the cave, and of which a plate is

* All these measurements in the case of Skull F are to some extent conjectural, owing to the absence of the right auditory meatus.

here given.* The face is complete except for all the front teeth, which fell out of their sockets after death. The calvaria also is complete, except for a large portion of the left temporal. The lower jaw, too, is missing, unless some of the numerous fragments of jaws pertain to it; none of the perfect specimens being large enough. The right parietal and occipital are in a broken condition.

This skull is rather thin. The inner surface is slightly glossy. The sutures are open in both tables: the sagittal and lamdoidal are intricate. In general contour, the calvaria is dolichocephalic, that is, in type, rather than actuality, the unusual development of the parietal eminences very materially increasing the breadth, and thus making the cephalic index an unfair criterion. The development and forwardness of these eminences give a somewhat double wedge shape to the horizontal outline. In the side view, the forehead is seen to be moderately full; the superciliary ridges (which are well defined, and tend to be confluent) and the frontal eminences, not strongly marked; the rear slope, gradual; and the occipital squama, protuberant. In the rear and front views, there is a well marked sagittal carination. The sides are vertical, and the points of greatest breadth are low down and almost vertically above the mastoid processes. All these features, together with the small amount of wear exhibited on the teeth, indicate that the owner died in the early part of middle life, that is at an age not far removed from thirty-five, the sex being probably male.

Four perfect lower jaws and many fragments of others were found during both excavations. Of these perfect ones, three have a common likeness. In these, the body is not deep, and the alveolar border is almost parallel to its lower surface. The ramus is vertical, short, and broad; and its coronoid process is but little (not at all in one case) elevated above the level of the condyle, while the sigmoid notch is shallow. In plan, the chin is rather pointed. So far as can be judged from the

* The Plate has been prepared by the process described on page 131, Vol. XII.

fragments, all the broken jaws were similar to these; but the fourth perfect one was of a different character—the ramus sloping, the chin deep, the sigmoid notch large, and the coronoid process lofty. The following measurements of these perfect lower jaws will probably be of some value to anthropologists :—

	No. 1.	No. 2.	No. 3.	No. 4.
Inter-angular width	3· 7 in.	3· 2 in.	3·15 in.	3·35 in.
Width of ramus at grinding level	1· 5 in.	1· 4 in.	1· 3 in.	1· 2 in.
Vertical height of condyle	2·42 in.	1·75 in.	1·75 in.	2· 1 in.
Depth at symphysis	1·15 in.	1· 0 in.	1· 0 in.	1·25 in.

Of these, No. 4 is the exceptional jaw. The teeth of Nos. 1, 3, and 4 are scarcely worn at all, and those (two molars, the only teeth left) of No. 2 only moderately so. The latter, however, belonged to a youthful person, for the wisdom teeth have not made their appearance; while the owner of No. 3 was in his or her second dentition. It may be mentioned here that some of the long bones found in the cave belonged to very young children.

Two perfect femora, and fragments of about a dozen more, were found during the excavation of 1889-91. The former were among the loose *débris* of Chamber 2. Of these, the one is large and cylindrical, and its *linea aspera* is strongly marked, but not so much as a projection, as a broad and rugged pilaster, averaging $\frac{3}{8}$ in. in width, and with the two lips well separated. Its length, reckoning from the summit of the head, is 17·75 in.; and reckoning this as 27·51 of the total stature in life (= 100), the latter would be 5 ft. 4·8 in. The other femur is much smaller, more slender, and less cylindrical. The length is 14·625 in., making the total stature 4 ft. 5·1 in. The *linea aspera* is bold, but narrow and rounded, taking the form of a keel-like projection. This ridge is also more or less strongly marked on all the shaft fragments.

The broken pair of femora referred to on page 244 in the last report, are very similar to the latter, only they are rather larger. The fractured surfaces are undoubtedly those of bones broken

in a living or fresh condition. Most of the tooth marks are those of the rat, but there are a few of some larger animal. Can it be that these heavy and new-looking bones belonged to the same skeleton as the new-looking pieces of skull referred to on page 38 of the first report, of which it was suggested that possibly they were "the silent witnesses of some terrible tragedy?" It is also likely that a portion of a right tarsus with the third and fourth metatarsals, found in 1888, belonged to the same skeleton, as they are equally new looking. These bones are cemented into a solid mass, apparently by gouty concretion. If I am right in my conclusions, it would seem that the "tragedy" resolves itself into some unfortunate individual, half lame with rheumatism, slipping into the cave and breaking his thigh bones thereby, and there dying.

The only perfect tibia, the one referred to on page 163 of this report, is 12·625 in. long, which, if reckoned as 22·15 of the stature (= 100), gives 4 ft. 9 in. for the latter.

THE POTTERY.

The general character and distribution of the potsherds were given last year (pages 244-7). As then indicated, the hand-made ware exhibited considerable divergencies in texture and colour. The older examples—that is, those found below the superficial portion of the floor—were invariably friable; so much so, as to frequently render their removal from the soil impossible. This, together with their internal, and sometimes external, blackness, caused us very often to mistake small fragments for charcoal. Superficially, these potsherds varied from a dull buff to a brownish black. In some, the paste was intermixed with broken limestone or calc spar; in others, with broken shell—presumably snails' shells. It is tolerably clear that those which have been preserved relate to quite seven or eight different vessels; but what the shapes of these vessels were, it is impossible to say, except in three cases, and these only imperfectly.

The two sets of potsherds already referred to in this report as of the earlier sepulchral period, were with little doubt "food"

vases, and as such must have accompanied one or two of the interments. Those now to be described (Fig. 1) furnish but little to form an idea of the general shape of the perfect vessel, beyond that it was about 8 in. in diameter, and had a boldly recurved lip and shoulder, and that the sides immediately below the latter did not take a rapid slope inwards towards the base; but it is quite likely that, as in the next to be described, this slope rapidly increased lower down. The shape and decoration of the upper part of this vessel can be readily made out from the illustration. The decoration consisted of horizontal incised lines, with intervening bands of punctures, except on the neck. These punctures are somewhat like a crescent in shape, and were evidently produced by a split twig from which the pith had been removed. The inside surface of the neck is slightly decorated with horizontal and diagonal incised lines. The surface colour is a dirty buff, and the paste is mixed with broken limestone.

The other vessel was larger, and had a similar but bolder lip. It was dusky brown in colour, and its paste was mixed with copious broken (snails'?) shells. So far as can be judged from the fragments, the sides sloped gently inwards at first below the shoulder, then bulged slightly outwards, and then took a rapid slope inwards to a small base; that is, the general shape was not unlike that of a top, or to compare it with other vessels of the same kind, those of Figs. 70 and 71 in Greenwell and Rolleston's "British Barrows." The decoration consisted mainly of horizontal lines of twisted-cord or thong impressions. There were several of these inside the lip and on the shoulder, and below the latter they were so close together as to form a sort of fine diaper. The bulge and the edge of the lip were decorated with finger-nail impressions not very regularly disposed. Below the bulge, the lines of twist were resumed, only they were wide apart.

Of the large number of potsherds of indeterminate relative age which were found here and there in the lower diggings, only one was sufficiently large to give an idea of the original vessel. It was found on the Refuse Layer, in the right region. As may be gathered from the illustration (Fig. 3), the vessel of which it

once formed a part was rather unusual. The mouth was 7 in. across; the lip recurved, but the neck short; and the sides so upright that the upper portion of the vessel must have had a jar-like appearance. At about 4 in. below the shoulder, the sides took a rapid curve inwards, suggesting a rounded flat bottom. The decoration is sufficiently elaborate to warrant our regarding the vessel as sepulchral. The upper surface of the lip has two rows of straight punctures, apparently produced by a small chip of wood impressed in a slanting direction. The outer edge has a row of finger-nail impressions. The lower part of the shoulder has a row of small gashes. The upper part of the body has another row of finger-nail impressions. The middle portion of the body is decorated with more or less vertical grooves, made by a bluntly pointed object stroked over the surface; and the lower portion has several irregular rows of oblique impressions, perhaps of the same object. The superficial colour is a dusky brown, and the paste is mixed with broken spar or limestone.

Fig. 2 is a curious perforated cylinder of similar texture and colour as the last, close by which it was also found. It is in length $3\frac{1}{2}$ in., and diameter about $2\frac{1}{4}$ in.; and the perforation, which is circular, is about $\frac{1}{2}$ in. in diameter, but it slightly contracts towards the middle of the cylinder. The imprint of the fingers of the hand that shaped it can still be traced, and even the grain of the skin. Several fragments of another cylinder of similar size were found near the above. I have been unable to obtain any clue as to the use of these objects. Mr. Franks, F.S.A., informs me that there are only two objects at all like them in the British Museum—the one was found at Long Wittenham, Berks., and the other in a barrow at Shefford, in the same county, and associated with two vessels of British pottery and some flint scrapers.

Most of the other fragments of pottery were either plain, or, when decorated, too small to enable one to form much idea of the vessels of which they once formed part. The few hand-made potsherds found so near the surface as to suggest a much more recent origin, were, like the curious earthen cauldron

described in the first report, harder, redder, and devoid of decoration.

THE FAUNA.

The human remains being comparatively few, it was no hard task to compare the skull fragments of different levels. But to have done the same with the animal bones would not only have been an almost interminable labour, but could not have given results in any degree commensurate with the trouble. All the deposits cut through belonged to one geological period, that which is still with us, and which will probably yet run for thousands of years ; and when the oldest of these deposits was formed, man had already brought under his dominion the present ordinary domesticated animals. It was not to be expected, then, that the remains of the fauna, wild or domestic, would exhibit much change. So the inability to separate them in accordance to their several deposits, is, perhaps, no great cause for regret.

All the animal bones found during the systematic excavation, except the very small broken pieces which obviously would have been of no use in the work of identification, were duly submitted to Professor Boyd Dawkins, who kindly examined and identified them. This must have been a most tedious work, for there were many hundreds of these bones, all wrapped in bags labelled according to the foot-strips from which their contents were derived. The following is a complete list of the mammalian fauna, deducted from his long and detailed catalogue :*—

British short-horned ox.	Wolf.
Urus.	Dog.
Sheep.	Fox.
Goat.	Badger.
Horse.	Hedgehog.
Hog.	Water-rat (*Arvicola amphibia*).
Red-deer.	Hare.
Roe-deer.	

* All of these were also found during the work of 1888, and in addition, the rabbit and the wild cat.

Of these, the bones of the ox—the small British variety, *Bos longifrons*—were most numerous. Next in order were those which Mr. Dawkins cautiously identified as "sheep or goat." The impossibility of distinguishing between most of the bones of these two ruminants is well known; but in several instances, he was able to definitely assign skulls, or fragments of skulls, to one or other of them.* The stag and the fox, as was to be expected, were fairly well represented, but their bones in point of numbers follow the above at a long distance. Those of the horse, and particularly the hog, were decidedly scarce; the latter, however, were rather plentiful in the superficial deposits excavated in 1888. Equally scarce were those of the dog† and the badger, and still more so, those of the wolf and the hedgehog. All the world over the dog has been so frequently found buried with his master or mistress, that it is quite likely some of these animals were thus introduced into this cave. The bones of the water-rat were plentiful almost everywhere in the cave, in some spots the soil consisting of little else besides. The bones of this rodent are also almost invariably present in the barrows of the district. Did these animals make these retreats their homes, or were they dragged thither and devoured by carnivorous animals who preyed on them? To judge from the sound condition of the bones (even the smallest and most delicate), the former is true; and if so, the presence of these bones must be, as the late Mr. Rooke Pennington suggested, "a sure sign of a great change in the physical condition of the country."

The presence of the urus is very interesting. Although the remains of this large animal are frequent in Pleistocene deposits, they are very rare in those of later times. Indeed, there seem to be only two recorded cases, besides the present one—Cissbury, with Neolithic remains, and Barton Mere, near Bury St. Edmunds, with those of the Bronze age. The Rains Cave

* Two skulls of sheep (both found in 1888) are tolerably perfect—the one horned and the other not. The most noticeable feature about them is their small size compared with those of the present.

† No perfect skull of dog was found, but all the lower jaws indicate an animal about the size of a retriever.

specimen consists of a metacarpal, broken to extract the marrow. It was found on March 22nd, 1890, in the Refuse Layer of the central region, among the bones of the human skeleton described on page 163.

In some of the crevices and holes, the cave-earth was almost free from stones; and to a very large extent it consisted of small bones, and bone dust. One specimen taken from the chamber at the back of the large cave, weighed, when dried, 24 oz. After the finer particles (bone-dust and heavy loam) were washed away, the residue, consisting almost entirely of bones of small rodents, frogs, etc., weighed $5\frac{1}{2}$ oz., and occupied nearly the same volume as before.

In Mr. Dawkins' catalogue, the rabbit is mentioned once. But the specimen he referred to was in a box which contained a number of bones found during the excavation of 1888, and therefore *near the surface*, where also many other rabbits' bones were found. This little circumstance is of value, for this animal is of comparatively modern introduction into Britain, not earlier than "in or just before the thirteenth century" according to Professor Rogers ("History of Agriculture and Prices in England").

It is quite possible that the *scraped* bones were done so with flint knives or scrapers. If with bronze or iron knives, they must have had very jagged cutting edges. But the hacked and cut bones are very much more conclusive. No implements of stone could have produced the narrow and incisive cuts they exhibit.

Here and there, and at all levels, considerable numbers of snails' shells were found. These comprised all the commoner land shells now in the district. And to these must be added the aquatic *anodonta cygnea*, referred to on page 239 of the last volume.

In conclusion, although the yield of Rains Cave was very trifling compared with that of Kent's Cavern at Torquay, or the Cresswell Caves in this county, yet in certain respects it excels them. In each of the latter caves there was a surface soil rarely exceeding 1 ft. in thickness, which contained objects ranging from Neolithic times to the present. Nothing, however, could be made out,

with any degree of exactitude, as to how they came to be where they were found; consequently, the history of these caves for the period represented by this surface soil is little more than a mere blank. But what was compressed into a foot or less in these caves is represented in Rains Cave by several feet, at least, and distinct stratification, which unfolds an orderly sequence of events; and detailed as this history is, it is very unlikely that it carries us so far back as the Neolithic period.

There is a lesson that should not be over-looked. Suppose that the Refuse Layer had turned out to be of Pleistocene date, and that the excavation had not been conducted on systematic and precise lines, how easily might it have been concluded that the human remains in this bed were contemporary with it, and, therefore, Pleistocene! In many cases where human bones have been found associated with Pleistocene remains, the more recent accumulations are so thin that it would be difficult to dig graves in them deep enough to admit of corpses, without penetrating the older beds. The evidence must, indeed, be strong—as the presence of an *undisturbed* sheet of stalagmite between the older and the newer beds—to place the Pleistocene origin of such bones beyond dispute.