

Kent's Cavern.

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About a mile east from Torquay Harbour, on the western side of the Vale of Ilsham, stands a small limestone hill, which contains the large cavern known as "Kent's Hole."

Previous to the year 1864 very little general attention had been paid to the cavern, and most of the interesting and remarkable facts published were received with incredulity.

In 1864 a Committee was appointed by the British Association, to carry on investigations, and extensive work was undertaken, supervised by Mr. Pengelly.

The cavern has two entrances in the face of the same vertical cliff, on the eastern side of the hill. They are 200 ft. above sea-level, and 60 or 70 feet above the bottom of the adjacent valley. Of the two parallel divisions which comprise the cave the eastern is the larger, with a length of 285 feet, breadth 90 feet, and maximum height 22 feet.

Mr. Pengelly's careful search revealed the following deposits (described in *descending* order).

I.—A "Black Mould," varying in depth from 3 to 12 inches, and consisting chiefly of dark earth and charcoal. Here and there limestone blocks fallen from the roof were found lying on the surface.

II.—A layer of stalagmite, from 3 inches to 3 feet thick. It was laminated and of granular texture, and known as the "Granular Stalagmite."

III.—A "Black Band" about 4 inches deep and having a total area of about 100 square feet. This consisted of local deposits composed chiefly of charred wood. Its nearest point was 32 feet from the northern entrance. Throughout about half its area it was in immediate contact with the nether surface of the stalagmite floor.

IV.—"Cave Earth," reaching a depth of over 4 feet, and consisting of red ochreous loam, and 50 per cent. small fragments of limestone. There were also present a considerable number of well-rounded pebbles of grit, quartz, slate, and granite, all of them such as the cavern hill cannot supply.

V.—“Crystalline Stalagmite” of denser composition than the granular floor, and reaching in one instance, where it merges into the upper stalagmite, the astonishing thickness of 12 feet! This deposit dominates the western portion of the cavern, as the other does the eastern, though the two layers are, in general, found in super-position.

VI.—The “Breccia” beneath is of unknown depth. In one gallery it was excavated to a depth of 9 feet below the first crystalline floor, and in a few places right to the rock floor.

It is composed of red loam mixed with angular and rounded stones, the whole cemented together into a mass hard as rock. The colour is a deeper red than that of the cave earth. Stones not derivable from cavern hill are present in greater numbers. For various reasons it is no doubt possible that objects of different ages may lie side by side in the black mould; to take an extreme case: a coin or article dropped by a recent investigator in contact with, say, a Romano-British ring. From the nature of the stalagmite floor, however, it is certain that everything beneath the latter is of much greater antiquity than the most ancient article in the mould. The objects, natural and artificial, contained in the mould formed a large and miscellaneous assemblage, ranging from comparatively recent date back through mediæval, Romano-British, and pre-Roman times. The series included human vertebræ, teeth, jaws, and portions of skulls; remains of bat, badger, wolf, fox, hare, rabbit, small rodents, pig, sheep, birds, and fishes. Terrestrial and marine shells were present, the latter similar to many still inhabiting the neighbouring shore; whetstones and polishing stones, flint flakes, and spindle whorls of different stone.

Curvilinear plates of slate, possibly intended for use as pot-covers, were also discovered, together with amber beads, bone awls, chisels, and combs. Among the bronze articles found were rings, a spoon, a spear-head, and a pin.

Pieces of pottery were abundant and in great variety.

In the upper stalagmite objects of interest were not numerous. Among the finds were remains of the cave bear, hyena, tichorine rhinoceros, and mammoth; flint flakes, implements, cores (i.e., remnants of flint nodules from which flakes had been struck),

charred wood, and marine and land shells. Some of the remains of the extinct animals were not only near the upper surface of the stalagmite, but in a few cases were incompletely covered by it, while, under 20 inches of stalagmite, near the base, a human jaw was discovered, containing four teeth, and having a loose tooth lying near it.

The black band contained 350 flint implements and flakes. Charred wood formed a considerable part of this deposit, and mingled with it were charred bones. Implements of bone, remarkable for the workmanship shown, included an awl, a well-formed harpoon, and a portion of a needle with a nicely made eye, capable of carrying fine twine.

Chief among the animal remains were those of the bear, deer, hyena, and rhinoceros.

In the cave earth was a great harvest of common mammals, with many extinct species, such as the mammoth and cave bear. The hyena was very much in evidence, for the bones were mixed and gnawed, there being no complete skeleton of any kind.

Indications of man were also discovered everywhere, in the shape of flints, ovoid and lanceolate, carefully chipped and having no polish.

Mr. Pengelly tells us: "The singly barbed harpoon was 1 foot deep in the cave earth, that doubly barbed was 2 feet deep, and the bone pin was found 4 feet deep, at the very bottom of the excavation, where it lay in contact with the molar of a young rhinoceros. These bone implements had lost their gelatine, and adhered firmly to the tongue."

Nothing but bones of the cave bear were found in the old crystalline stalagmite, these being present in great quantity.

The breccia surpassed the cave earth as regards the number of bones, but again there was no variety, nor traces of any animal but the bear.

Even here was evidence of the presence of man, for a flint flake and a perfectly angular and sharp flint chip were discovered 3 feet deep. The flake is undoubtedly the most ancient human relic that the cavern has yielded. Two more flints have recently been obtained from the same source.

It is interesting to note that the first remains of the sabre-toothed tiger ever discovered in Great Britain came from the cave earth in the "Wolf Passage" in Kent's Cavern.

Of the foregoing facts, those which seem to bear most directly upon the question of human antiquity are as follows:—

(1) The detection of the human jaw at the *base* of the "modern" stalagmite, and the remains of the extinct mammals at the upper surface of the same deposit.

(2) The discovery of the black band.

(3) The presence of the bone implements with the remains of extinct animals below the modern stalagmite.

(4) The flint flakes in the breccia.

The first and third show that man was the contemporary of the mammoth, for though doubt has been thrown on the origin of flints in general, the bone implements are without question the work of man.

The "black band" was probably the hearth around which these cave-dwellers assembled for meals, and for the preparation of their implements. Its area was such as to secure its selection for this purpose. From its proximity to the entrance, the daylight would be available, and sufficient current of air would be passing to prevent undue discomfort from the smoke. The amount of drip, also, would not be serious in this part. These points have all been carefully observed and tested by investigators.

Kent's Cavern is not a natural repository of flint nodules, no flints being found there except those which have been worked; that is to say, the cave man obtained the nodules from other sources, and took them *home* to be worked up at his leisure.

At first, it seems very remarkable that hyena bones should be found in the dwelling place of man, but this difficulty is easily removed if we assume that the hyenas and men occupied the cave alternately. In a climate like ours savages who depend upon hunting need about 40 square miles each on which to live. A party of, say, ten would therefore wander over great distances, frequent migrations being necessary in order to obtain means of subsistence. Hence hyenas would be able to take possession of the cavern during such absences, to be driven out again when

the human owners returned. A similar alternate occupancy is known to have taken place until quite recent times in Tunis and Syria.

It is, of course, impossible to convert geological time into astronomical, but with these data at hand we are able to trace time back in rough steps, assigning a minimum limit in each case.

The period between the present day and the date when the surface mould in the cavern began to accumulate cannot be less than 2,000 years, and this estimate is probably too low.

We are now faced with the question, "Was the first portion of the mould deposited immediately after the formation of the stalagmite was complete?"

Not one of the bones in the mould belongs to any extinct animal, whereas remains of at least four totally extinct species were found projecting from the stalagmite.

Since, in general, some considerable period is necessary for the extinction of any one species it seems probable that there was a certain lapse of time before the mould began to collect.

For the next step we must turn to evidence of a very different nature.

Inscriptions are fairly numerous in some parts of the cavern. For example, cut on a huge boss in the "Cave of Inscriptions" is the following:—

"Robert Hedges of Ireland, 1688."

As far as it is possible to tell, from a careful examination of the district, drainage, and other conditions which affect the case, have undergone no very important change.

The boss rises from the stalagmite floor, and, judging from its great mass and the still abundant drip, it was formed at a rate far exceeding that of the floor.

Hence, the only danger is that of underestimating, if this rate be taken as the average for the whole floor.

That the particular inscription was forged is unlikely, for an early investigator, describing it in about the year 1828, says: "The letters are glazed over and partly effaced." His description applies equally well now.

Neither in the Cave of Inscriptions, nor in the Crypt of Dates, do the films which have formed over the inscriptions exceed one-twentieth inch in thickness, after two and a half centuries of drip! Even taking a higher rate of formation the period represented by 3 feet of stalagmite is astounding.

The conclusion that the rate of accretion of the stalagmite was very slow is borne out by the fact that the layer consists of very thin laminal. In addition, a study of the contents of the black band gives a little help in arriving at an approximate estimation.

Savages have always been slow to emerge into a civilised state if left alone, and changes of habit and custom must have required long periods in pre-historic times.

In any excavations, carefully executed, the discovery of an iron implement stamps a period as belonging to the Iron Age, even though bronze and perhaps stone implements be present also.

It is quite reasonable to suppose that men still continue to use bronze and even stone utensils after iron came into use, and that the transition from one Age to another extended over a long time.

In view of this, since no *polished* flints were found below the upper stalagmite, we may at least say that the last of the black band was deposited before the transition from the Paleolithic into the Neolithic Age commenced.

Before arriving at any estimate of the interval of time represented by the black band and cave earth, several questions have to be considered. Examination of the cave earth and the stones it contains leaves little doubt that it was derived partially from the soil of the district and partially from more distant localities.

As for the manner of its introduction, it is safe to conclude that the main bulk was washed in through the existing entrances (there being no other means of ingress), since these are above the average level.

The following is a rough summary of the evidence which was produced in support of the theory that the cave earth was laid down in small quantities, and at widely different intervals.

(1) Many of the bones at all levels in it are invested with *films of stalagmite*.

(2) The huge blocks of limestone, fallen from the roof, were found in, below, and above the modern stalagmite, and at different

levels in the cave earth, showing that all were *not* dislodged at one and the same time by some flood.

A study of the agency by which these blocks were caused to fall gives a rough idea of the interval of time which elapsed between successive introductions of cave earth. Water, slightly acid, filtering through the vertical joints and fissures of the roof gradually dissolved away the limestone, widening these fissures, until eventually, a mass of rock became detached and fell.

(3) Bones found beneath these fallen blocks were invariably crushed, the fragments being still close together and immediately under the rock, showing that their particular level was a *hard floor* when the block fell, and not of a soft, yielding quality.

Regarding the deposit of the old crystalline floor, little evidence is forthcoming, but, judging from its great thickness, and then laminae, the period required for its formation doubtless far exceeded that of the modern stalagmite.

No means exists either of fathoming the antiquity of the breccia, but even *this* was not laid down prior to the advent of man.

In conclusion, it is interesting to note that the facts discovered in the Brixham Cave and from an examination of the clay at the bottom of the sea in this vicinity tend to confirm the evidence for the great antiquity of man, which was first definitely established by these investigations undertaken by the British Association at Kent's Cavern.
