

EXCAVATIONS AT GHAR DALAM (DALAM CAVE), MALTA.

By G. DESPOTT.

[WITH PLATES I—IV.]

THE excavations here described were conducted at Ghar Dalam between the summer of 1918 and that of 1920, and consisted in the digging of three large trenches spoken of as—

- (1) The outer trench.
- (2) The middle trench.
- (3) The inner trench.¹

The first piece of work consisted in examining that portion of cave earth between the trench dug in 1916, described in *Report of British Association* of that year, and the trench dug in 1917, described in *Journal of the Royal Anthropological Institute* of 1918.

These two trenches differ little as regards either stratification or remains from those here dealt with. A word may, however, be added concerning the human remains of the older excavations (Pl. IV, Figs. 3 and 4). These consisted in—

- (1) Two molar teeth and a phalanx, in the third layer.
- (2) A phalanx in the second layer.
- (3) A canine tooth in the third layer.

It is perhaps also important to mention an incisor tooth of a horse found almost at the top of the last-mentioned layer. This incisor is notably smaller than that of a modern horse.

MIDDLE TRENCH.

The first trench excavated in the new operations was the middle trench, which runs from the trench of 1917 to an old rubble wall which stands about 18 feet nearer to the entrance of the cave. This trench is, therefore, now about 33 feet long, having an average width of 26 feet.

The organic remains found here consisted of some very friable bones of the pig, dog, sheep or goat, cow, horse, rabbit, rat and bat, along with many shells of *Helix aspersa* and clumps of the common seaweed (*Posidonia caulinis*). The inorganic remains consisted of a good number of potsherds belonging to various periods, ranging from the Punic to the present age.

Along this relatively small portion of the cave floor were remarkable differences in both thickness and extension of the different strata, and this induced me to leave

¹ *Vide* plan and sections of the cave, p. 19 (kindly prepared by George Sinclair, Esq.).

GHAR DALAM, SKETCH PLAN, FRONT PORTION.

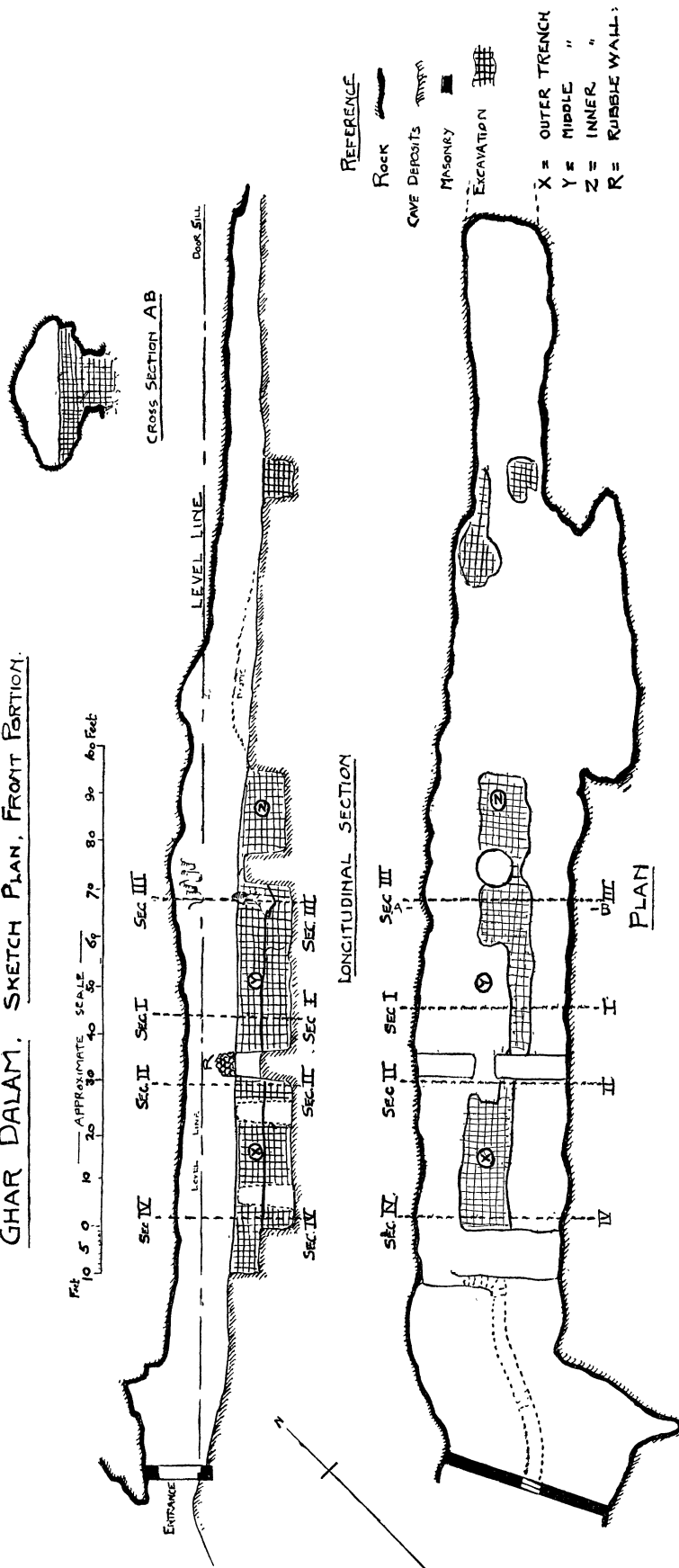


FIG. 1.—PLAN AND SECTION OF THE CAVE. (PREPARED AND FURNISHED BY GEO. SINCLAIR, ESQ.)

standing in their original position portions of earth for future reference. Evidently floods had hollowed different parts of the floor, on which new material was then deposited and had thus formed layers described by Cooke as "lenticular." Some of these were 2 feet in depth and had a diameter of 20 feet or even more; others which were also about 2 feet deep were only about 3 feet in diameter. Animal remains have been found in some of these deposits.

The complete series of layers here is as follows :—

- (1) Red soil varying in thickness from 1 to $2\frac{1}{2}$ feet.
- (2) Interrupted layers of whitish light earth, something like *Torba* in consistency and varying in thickness from 1 to 3 inches or more.
- (3) Red earth 1 to 4 inches thick, having in it some thin layers of a different sort of soil.
- (4) Whitish light earth, 3 to 6 inches deep, very similar to No. 2.
- (5) A similar soil, only differing in consistency, being somewhat clayey, varying in thickness from 5 to 8 inches.
- (6) A whitish soil of a peaty consistency, 5 to 6 inches deep.
- (7) Reddish soil about 5 inches thick, having in it several layers of lighter or darker soil varying in thickness from 2 inches to a few lines.
- (8) Dark reddish soil about 1 inch thick.
- (9) Lighter reddish soil 2 to 3 inches thick.
- (10) Whitish earth $\frac{1}{2}$ to $2\frac{1}{2}$ inches thick.
- (11) Reddish clayey earth $1\frac{1}{2}$ to 2 feet deep.

A detailed description of the layers forming the inner side of the middle trench will give a good idea of the changes in the different strata.

- (1) Red soil 1 to 2 feet in depth, with stones embedded.
- (2) Same sort of soil but practically free from stones, and having a few bits of the remains of deer.
- (3) Red earth with small bits of stones and stalactites and bones of stag. Some of these bones have the outer part of a black colour, whilst internally they are of an ashy-grey. Some of them have bits of stones and stalactites adhering to them by means of a stalagmitic infiltration. This layer is between 3 and 4 inches thick.
- (4) Red soil mingled with whitish clay $1\frac{1}{2}$ to 2 feet deep. The remains of deer are pretty common, especially at the bottom of this layer.
- (5) A layer 3 to 4 inches deep, consisting of red earth wherein are embedded stones of various shapes, especially flat.

We may now take the principal layers of this trench together with the organic remains found in each.

1st Layer.—This layer consisted mainly of red earth and stones, and varied in depth from 1 to $3\frac{1}{2}$ feet.

The following are the organic remains found therein :—

Mammalia.

Man.—Some phalanges and teeth found at a depth of 2 to 3½ feet.

Pig.—Several molars found at surface of layer and a mandible at a depth of about 2 feet.

Deer.—A few fragments of bones and antlers in various stages of mineralization ; probably belonging to two distinct species of the genus.

Rats.—A great abundance of bones, probably belonging to these rodents, found at the surface of this layer towards the left side of the cave. These, however, were so friable that not a single bit could be saved.

Aves.

A few bits of birds' bones at various depths, not yet identified.

Pisces.

A vertebra of a fish found at bottom of layer. It appears too much fossilized for this depth.

Mollusca.

Macularia vermiculata (Mull.).—Shells of this snail found in great profusion in various parts of the layer ; amongst them there are several distinct forms of the species.

Rumina decollata (Lin.).—The shells of this species were equally common all through this layer.

Papillifera oscitans (Fer.).—Fairly common. No difference can be seen in these specimens from those of the recent ones found in the neighbourhood of the cave.

Papillifera bidens (L.).—Also common and quite similar to recent specimens.

Mastus pupa (Brug.).—Frequent, especially near the left-hand side.

Cyclostoma melitense (Sowb.).—Also frequent and identical with the recent species.

Xerophila ceruanae (Kob.).—Very scarce. The few specimens met with are very small, quite unlike those which are very common in the vicinity to-day.

Trochus turbinatus (Born.).—Fragments of this marine species were met with at various depths. Very probably the species was used for food, as it is also used by some people to-day.

Some of the shells of *Rumina*, *Papillifera*, and *Bulimus* found near the large stalagmite, and almost at the bottom of this layer, have a stalagmitic coating, showing perhaps the length of time they lay in the same spot undisturbed.

Echinoidea.

Cidaris.—A species was found at the bottom of this layer ; it might have, perhaps, served as a tool for making incisions on pottery, as the species is not edible.

The inorganic remains consisted of a great number of potsherds, some sling-stones, flints, and a few ornaments. Of these the following are the most important :—

Pottery.

- (1) A bit of very well baked pottery, $\frac{1}{3}$ inch thick, internally is of slate colour, outer part is of a fine ochre, having also a fine slip. The incisions on this sherd are well marked and accurate. Depth about 3 feet. (Pl. I, Fig. 1, No. 1.)
- (2) A fragment of pottery of a somewhat coarser texture than the foregoing, having a similar slip, the incisions not so perfect. Internally this sherd is of slate colour, having some buff on the outside. Thickness about $\frac{1}{3}$ of an inch, depth 3 feet. (Pl. I, Fig. 1, No. 2.)
- (3) A sherd of same texture, thickness and colour as No. 1, but having no slip, and a different design. (Pl. I, Fig. 1, No. 3.)
- (4) A fragment of well-baked pottery of yellowish-grey colour, having a slip similar to that on No. 1. The designs are coarser. Thickness about $\frac{1}{3}$ inch, depth 3 feet. (Pl. I, Fig. 1, No. 4.)
- (5) A bit of well-baked pottery of a reddish colour, having a very dark slip on the outside. The incisions can be seen to have been cut on the dry clay. Thickness nearly $\frac{1}{2}$ inch, depth $2\frac{1}{2}$ feet. (Pl. I, Fig. 1, No. 5.)
- (6) A very fine sherd of buff colour internally, with yellowish-grey slip on the outer side. Incisions similar to the impression made on fresh clay by a twisted string. Thickness less than $\frac{1}{4}$ inch, depth $2\frac{1}{2}$ feet. (Pl. I, Fig. 1, No. 6.)
- (7) Very well baked bit of pottery, less than $\frac{1}{4}$ inch thick. Inside colour reddish, externally it varies from a bright red to a dark yellowish-grey, bearing also a fine slip. Depth over 3 feet. (Pl. I, Fig. 1, No. 7.)
- (8) A sherd which varies in thickness from $\frac{1}{4}$ to $\frac{1}{3}$ of an inch. Inside of a reddish-grey colour and a red and brown slip on outside. Incisions very deep. Depth $3\frac{1}{2}$ feet. (Pl. I, Fig. 1, No. 8.)
- (9) This sherd is similar in texture to No. 7, but designs are more perfect and evidently carved on dry clay. Depth about 2 feet. (Pl. I, Fig. 1, No. 9.)
- (10) Similar in texture to No. 6, bearing also similar impressions. Depth 3 feet. (Pl. I, Fig. 1, No. 10.)
- (11) Identical in texture and design to a bit found by Dr. Ashby in 1916. Depth about 3 feet. (Pl. I, Fig. 2, No. 1.)
- (12) Very rough texture. Incisions very irregular and rather deep, buff colour. (Pl. I, Fig. 2, No. 2.)
- (13) Very rough texture, less than $\frac{1}{4}$ inch thick, coarse and deep incisions, colour red and black. Similar to the pottery found at Borg in-Nadur. Depth 2 feet. (Pl. I, Fig. 2, No. 3.)

- (14) Similar in texture to No. 1. Incisions also regular, but it bears no slip. Depth $2\frac{1}{2}$ feet. (Pl. I, Fig. 2, No. 4.)
- (15) Similar in texture to No. 11, or possibly a little finer; it bears well-marked lines and varies in thickness from $\frac{1}{8}$ to $\frac{1}{4}$ of an inch. (Pl. I, Fig. 2, No. 5.)
- (16) Very fine texture bearing fine incisions and grey slip. Depth $3\frac{1}{2}$ feet. (Pl. I, Fig. 2, No. 6.)
- (17) Very coarse texture, the lines incised on it very rough. Poorly baked, about $\frac{1}{3}$ inch thick. Depth $1\frac{1}{2}$ feet. (Pl. I, Fig. 2, No. 7.)
- (18) A fragment of a handle shaped perhaps as a pig's head. Colour grey, well-baked. Depth $2\frac{1}{2}$ feet. (Pl. III, Fig. 1, No. 1.)
- (19) Finer texture than the preceding, having finer incisions and two holes in a slight knob, which was possibly meant for a handle. Depth nearly 4 feet. (Pl. III, Fig. 1, No. 2.)
- (20) Handle of very fine texture, colour fine reddish buff. The pattern has not yet been met with amongst the pottery found in the cave. Thickness about $\frac{1}{8}$ inch, depth 3 feet. (Pl. III, Fig. 1, No. 3.)
- (21) Roughly made handle of coarse pottery. Depth $2\frac{1}{2}$ feet (Pl. III, Fig. 1, No. 4.)
- (22) Handle of very fine shape, coarse pottery. Depth $1\frac{1}{2}$ feet. (Pl. III, Fig. 1, No. 5.)
- (23) Portion of handle of reddish pottery with many particles of shells in it. Depth about $2\frac{1}{2}$ feet. (Pl. III, Fig. 1, No. 6.)
- (24) Very rough handle of very coarse pottery, containing also fragments of shells. Exterior colour reddish, interior grey. Thickness about $\frac{1}{4}$ inch. Depth 3 feet. (Pl. III, Fig. 1, No. 8.)
- (25) Portion of a handle of same type as the foregoing but finer. About $\frac{1}{8}$ inch thick, depth 3 feet. (Pl. III, Fig. 1, No. 9.)
- (26) Handle of a finer quality, with regular incised lines. Though rather thick, the body of the vessel to which it belonged was not more than 2 or 3 lines in thickness. Depth $2\frac{1}{2}$ feet. (Pl. III, Fig. 1, No. 10.)
- (27) The most perfectly made handle amongst those found during the period of the excavations. Of a fine texture and dark slate colour. The incised lines are most accurately drawn. Depth 2 feet. (Pl. III, Fig. 1, No. 11.)
- (28) A handle similar in shape to No. 24, the texture similar to that of No. 25. Depth about 3 feet. (Pl. III, Fig. 1, No. 12.)
- (29) A handle, the shape of which is so far unique, composed of very rude pottery of a reddish and grey colour. Depth $2\frac{1}{2}$ feet. (Pl. III, Fig. 1, No. 13.)
- (30) Fragment of handle of fine pottery, grey colour, with few lines incised. Depth $2\frac{1}{2}$ feet. (Pl. II, Fig. 1, No. 1.)

- (31) Portion of handle of greyish pottery, with very roughly incised lines, originally filled with a white material. The vessel had a thickness of about $\frac{1}{3}$ inch, but the thickness of the handle is out of all proportion. Depth 2 feet. (Pl. II, Fig. 1, No. 2.)
- (32) Bit of handle of a similar kind of pottery to the foregoing, but totally covered with engraved lines, which were originally also filled with white material. Depth 3 feet. (Pl. II, Fig. 1, No. 3.)
- (33) Fragment of a roughly made handle of very rude pottery, having particles of shells in it. The vessel must have been very large though its thickness was only $\frac{1}{3}$ inch. (Pl. II, Fig. 1, No. 9.)
- (34) Fragment of a well-modelled handle, of a type so far unique. The pottery is of a rather coarse texture though quite smooth on the outside. Its colour varies from a dark grey to buff. Depth 3 feet. (Pl. II, Fig. 1, No. 10.)
- (35) Fragment of handle, also of very fine make, the pottery being of much finer texture than the foregoing. Its thickness is about $\frac{1}{4}$ inch, depth 2 feet, (Pl. II, Fig. 1, No. 11.)
- (36) A fine bit of pottery which might have possibly been meant for a handle. Its colour consists of several shades of brown and grey and it bears a rather fine slip. Depth $2\frac{1}{2}$ feet. (Pl. III, Fig. 2.)
- (37) Five very fine sherds of a dark slate colour, having rather elaborate engraved designs. These are amongst the finest bits of pottery met with during the whole of the excavations. Depth varies from 2 to $3\frac{1}{2}$ feet. (Pl. II, Fig. 2, Nos. 1, 2, 3, 4 and 5.)

Other artefacts found in this layer consist in the following :—

- (1) A shell of *Cypræa lurida* (L.), bored at one end, having evidently been used as a pendant. Depth $2\frac{1}{2}$ feet. Such a shell is still used as a charm in Malta. (Pl. IV, Fig. 1, No. 1.)
- (2) A portion of the pereostome of a marine shell, having a groove cut in its middle part. It might, possibly, have been used as a button. (Pl. IV, Fig. 1, No. 2.)
- (3) A fossil cast of a sea date (*Lithodomus*) bored at one end, having, obviously also served as a pendant. Depth $2\frac{1}{2}$ feet. (Pl. IV, Fig. 1, No. 3.) (These casts are frequently met with in our coralline limestone.)
- (4) A bit of worked flint of a reddish-brown colour, found at the very bottom of this layer. (Pl. IV, Fig. 2, No. 2.)
- (5) A very well worked sling-stone, made of globigerina limestone. Depth $2\frac{1}{2}$ feet.
- (6) Another sling-stone made of the same stone but not so well worked. Depth 3 feet.

2nd Layer.—This layer varied in depth from 1 to 3 feet or more, and mainly consisted of a fine red soil. Several of the above-mentioned lenticular-shaped deposits were met with in this layer.

The organic remains found were the following :—

Mammalia.

Man.—A tooth found at a depth of about 4 feet from the surface (Pl. IV, Fig. 3, No. 1), as well as some phalanges found at various depths.

Deer.—Towards the left of this trench the bones of deer were more or less common, in other parts they were scarce.

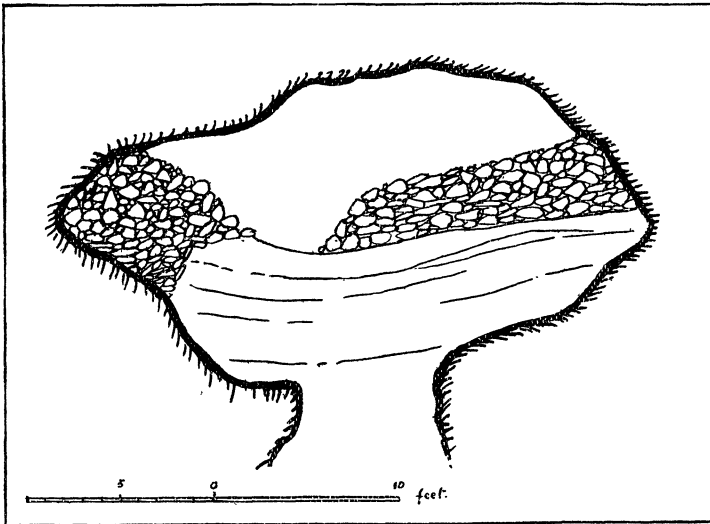


FIG. 2.—SECTION I.

Hippopotamus.—On the right-hand side of the cave at a rather high level and inside a moderately deep fissure (see Fig. 3, Section II) were found the bones which probably belonged to an entire leg of a hippopotamus. These bones are in a very good state of preservation, showing that they had not been rolled about in any way.

Vole.—Several bones, especially jaws, were found in one of the lenticular-shaped deposits. These remains belong to a new species which has been described by Miss Bate as *Arvicola melitensi* (see *Geological Magazine*, Vol. LVII, p. 209, May, 1920).

Aves.

Avian remains were met with at various depths; the greater part of these have not yet been identified, though some which were sent to the British Museum were declared by Miss Bate to belong to passerine birds (see *Geological Magazine*, Vol. LVII, p. 211).

Reptilia.

Toad.—A large number of bones which have been assigned by Dr. G. A. Boulanger, F.R.S., to the common toad (*Bufo vulgaris*) were found in a rather extensive lenticular-shaped deposit of red soil. They were particularly plentiful towards the left-hand side of the cavern.

Tortoise.—Some fragments of the carapace of *Lutremys europæa* were found in one of the pockets of dark-red soil above mentioned, at a depth of about $3\frac{1}{2}$ feet from surface. A plastron and a humerus of another chelonian were found in a different deposit at more or less the same depth.

No chelonians are found in a wild state at present in the Maltese islands, though specimens are imported and kept in confinement as pets.

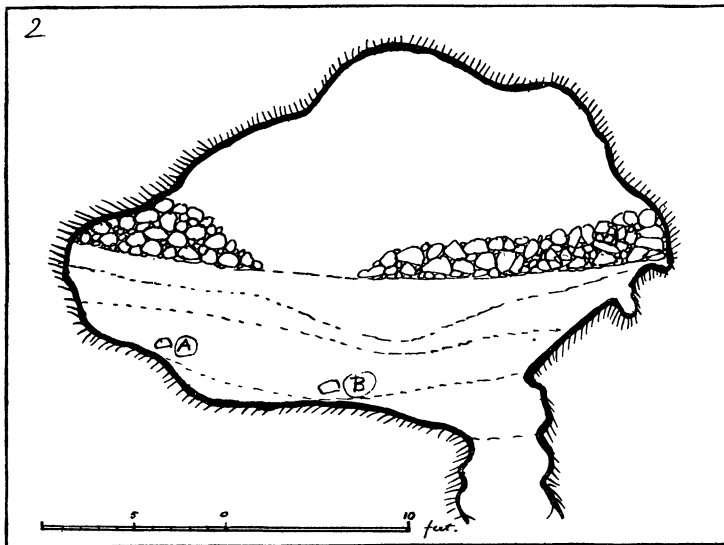


FIG. 3.—SECTION II.

Mollusca.

Iberus.—The variety *despottii*, C. Gatto, of this species of snail was very abundant in almost all the lenticular-shaped deposits.

Rumina.—Specimens of *R. decollata* were met with together with the foregoing.

Macularia vermiculata (Mull.).—Of this species only traces were noticed.

Towards the middle of this trench almost at the bottom of this layer (*i.e.* 4 feet from the original floor of the cave) several shells of *Iberus*, etc., were found having a stalagmitic coating.

Note.—As regards the toad, it is important to note that no species exists at the present day in the Maltese islands, notwithstanding the fact that *Bufo variabilis* is found on Lampedusa and *B. vulgaris* and *B. viridis* are both more or less common

in Sicily. I may also add that I have several times imported specimens of these batrachians, and though I have done my best to acclimatize them, they have never lived.

The artefacts in this layer consisted of the following :—

- (1) Two very roughly made sling-stones, found at a depth of about $4\frac{1}{2}$ feet from the surface.
- (2) A chert knife, $1\frac{1}{4}$ by $\frac{3}{4}$ inch, found almost at the same depth. (Pl. IV, Fig. 2, No. 1.)
- (3) A very well worked flint knife, 1 by $\frac{5}{8}$ inch. Its colour is partly yellow and partly red. Depth 4 feet from surface. (Pl. IV, Fig. 2, No. 3.)
- (4) A flake of stone, similar to flint, but more opaque and of a fine light red colour. Depth 4 feet. (Pl. IV, Fig. 2, No. 4.)

Besides these several neolithic sherds were obtained at depths which varied from 3 to 5 feet from the surface, but as the material where they were accumulated appeared to have been disturbed they were discarded.

3rd Layer.—This varied in depth from 2 to 4 feet and was also composed of a reddish soil which was of a pasty consistency. Both organic and inorganic remains found in it varied immensely in their distribution. Bits of stalactites and pebbles were very abundant, especially towards the inner part, whilst the soil in the part nearer to the entrance of the cavern was practically free from such material.

The organic remains consisted of the following :—

Mammalia.

Man.—Two teeth found in the centre part of the trench at a depth of about 6 feet. (Pl. IV, Fig. 3, Nos. 6 and 7.) The crown of one of them (an incisor), No. 7, is remarkably small and its root has a well-marked inward inclination.

A third tooth (Pl. IV, Fig. 3, No. 8) was found beneath a stalagmitic layer about $\frac{1}{2}$ inch thick, at a depth of about $5\frac{1}{2}$ feet from the surface. Its crown (a canine) appears to have been cut to give it a sharp pointed edge.

A fourth tooth (Pl. IV, Fig. 3, No. 9) was found at some distance from the others, whilst two more (Pl. IV, Fig. 3, Nos. 10 and 11) were picked up whilst digging over the chasm at a depth of about 6 feet from the surface (in 3rd layer).

An incisor (Pl. IV, Fig. 3, No. 12) was found at a depth of 6 feet, just beneath the smashed stalagmitic floor below the large stalagmite (*see* Fig. 4, Section III, A).

A metacarpal bone and a phalanx (Pl. IV, Fig. 4, Nos. 1 and 3) were picked up whilst digging at a depth of about 6 feet, but nearer to the entrance of the cave. These two bones are much less mineralized than any of the preceding, and are very light.

Hippopotamus.—Few, but very well preserved bones of *H. pentlandi* were met with at the very bottom of this layer, at a depth of 6 to 7 feet from the surface.

Elephant.—A very fine molar of *E. mnaidrensis* was found in what appeared to be another lenticular-shaped deposit of fine red earth at a depth of about 6 feet. This molar could not have been much rolled as its roots were quite sharp and almost complete. It is well mineralized, and both in colour and consistency is very similar to the globigerina limestone.

Deer.—Limb bones, teeth and bits of antlers were more or less abundant, especially towards the right-hand side of the cave. These remains belong to two distinct species of the genus.

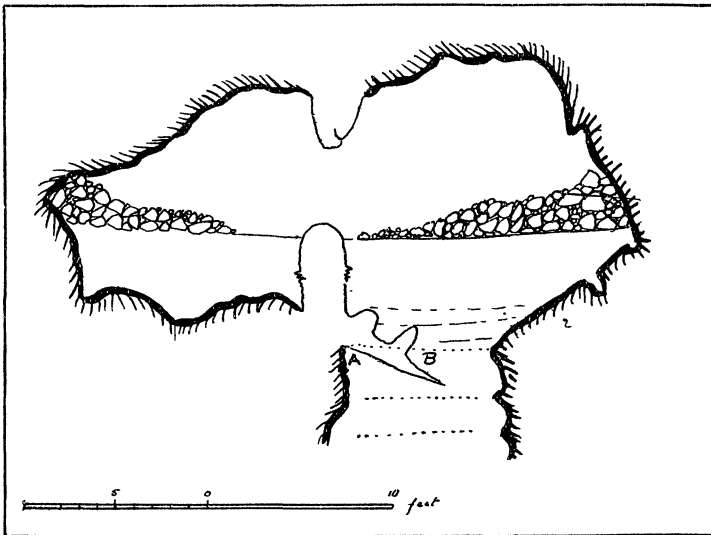


FIG. 4.—SECTION III.

The artefacts consisted in the following :—

- (1) A piece of lava, 5 by 4 by 1 inch, one side of which is very smooth showing that it had very probably been used as a grinder. It was picked up whilst digging at a depth of about 5 feet from the surface, to the left, in a deposit of red soil. (Section II, A, Fig. 3.)
- (2) A piece of globigerina limestone, 5 by 4 by $1\frac{1}{2}$ inch, very regularly shaped and showing signs of fire. Found at the bottom of this layer just above the rock shelf (at about 7 feet from the surface). (*Vide* Section II, B, Fig. 3.)

4th Layer.—This layer in some parts was as much as 3 feet deep, but sometimes it disappeared altogether.

The organic remains met with in it consisted of the following :—

Mammalia.

Hippopotamus.—Limb bones, molars and bits of tusks of these pachyderms were accumulated in fair quantities in various parts of this layer and were mostly in a very good state of preservation.

Elephant.—Bits of tusks were found in various parts, They were extremely friable so that they could not stand the gentlest handling.

Deer.—Bones of deer were only met with in the middle part of the trench and almost at the very bottom of this layer.

5th Layer.—This varied from the 4th layer chiefly in the great abundance of bones and teeth of Hippopotami and a number of molars of elephants. The latter species appear to be of much greater antiquity than any of the other remains, and all of them must have been carried for a very long distance before they were deposited here.

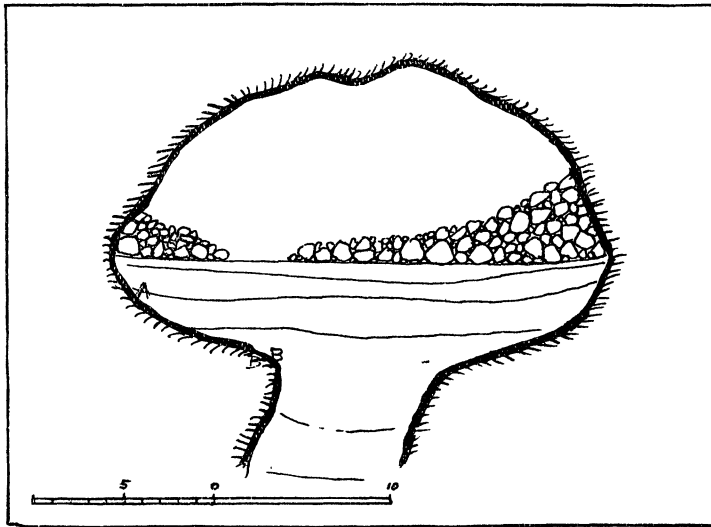


FIG. 5.—SECTION IV.

These remains vary greatly in colour, some being grey or yellowish, having blotches of darker shades. Others are of a bright ochre, whilst some are almost black. A number of them were found deposited in pockets of blue or yellowish clay.

The remains above described are only a small portion of what has been obtained from this trench ; a large quantity still remains to be examined.

THE OUTER TRENCH.

This trench, which is separated from the middle one by about 5 feet, is 30 feet long, having an average width of 27 feet. The strata vary considerably at a relatively short distance, and this may be seen from the portions of earth which have been left standing for the purpose.

The upper strata were not so rich in either animal remains or pottery as those of the middle trench, though some of the former are of great interest as they belong to species hitherto unrecorded either for Malta or for the cave.

The chasm in this part of the cavern runs generally almost at the centre (Section IV, Fig. 5). It is also much wider than in the middle trench. The rocks on the left-hand side are covered with a stalagmitic deposit which has percolated through the soil, thus some of the remains found here were adhering to each other, to other solid material, or to the rock itself.

The edge of the rock on the left side (Section IV, B, Fig. 5) has a peculiar gloss as if it had been smoothed down by a continuous friction. The superficial material in this part of the cave consisted of the usual rounded boulders, which in some parts were piled up against the sides of the cave to a height of 5 feet or more; the organic and inorganic remains amongst these boulders were also similar to those found with the superficial material of the middle trench.

The principal layers in this trench are five.

1st Layer.—Consisting of a compact red soil varying in depth from 6 inches to 1 foot, though at certain points it was as deep as 2 feet or even more. The following organic remains were found in this layer:—

Mammalia.

Man.—Two molars found at a depth of 1 and 1½ feet respectively.

Dog.—Bones of a dog found almost at the top of this layer. They appeared to be of a recent date.

Horse.—Many bones of the horse found both in this and in the second layer.

It seems probable that these were not deposited simultaneously with the soil, and they did not show any sign of fossilization.

Sheep or goat.—Several bits of bones and teeth belonging to either or both found at the top of the layer, but though old were not mineralized.

Aves.

A few bits found at a depth of from 6 inches to 1 foot. These have not yet been identified.

Mollusca.

Rumina decollata (R.).—Shells of this species were very abundant in some parts of this layer but they appeared to be very scarce elsewhere.

Macularia vermiculata (Mull.).—The shells of this snail were met with all through the layer but they were more plentiful in those parts where the preceding species was most abundant. The greater part of the specimens belonged to the small form of the species and are very similar to those found abundantly on Filfola at the present day. A few are, however, of an exceptionally large size and are larger than any which can be found now living on any of the islands of the Maltese group.

The artefacts consisted of many potsherds, the more important of which were :—

- (1) A bit of well-baked pottery of a dark slate colour, having some lines incised on it which were filled with the usual white material. Depth 1 foot. (Pl. I, Fig. 2, No. 9.)
- (2) A sherd of grey colour, having a thin layer of ochre on the outside. The incisions on it are very coarse and the pottery is of a very rough texture having particles of shells in it. Depth $1\frac{1}{2}$ feet. (Pl. I, Fig. 2, No. 10.)
- (3) A bit of pottery of a much coarser texture than No. 2. The lines incised on it are, however, very regular. It also contains many particles of shells. Depth $1\frac{1}{2}$ feet. (Pl. I, Fig. 2, No. 11.)
- (2) A fragment of a handle of light red pottery, probably belonging to the Punic period. Depth 1 foot. (Pl. II, Fig. 1, No. 4.)

2nd Layer.—Varied in depth from 1 to $2\frac{1}{2}$ feet and consisted of a loose red soil with a good number of angular stones embedded in some parts of it.

The organic remains found in this layer were the following :—

Mammalia.

Man.—One molar. Depth about 2 feet.

Deer.—Few bones, mostly broken, and some teeth met with at various depths.

Mollusca.

Macularia vermiculata (Mull.).—Met with more or less frequently and mostly in fragments.

Rumina decollata (R.).—Commonly spread all through the layer.

Cyclostoma melitense (Sowb.).—Very sparingly met with at various depths.

Not the slightest difference can be noticed in these specimens from those living at present in these islands. This is worth noticing, as in some of the pleistocene deposits of Malta the *Cyclostoma* met with is rather similar to the *C. sulcatum*.

Ostrea lamellosa (Brocc.).—One valve of this edible marine species was found at a depth of about $2\frac{1}{2}$ feet.

The artefacts consisted of two or three sling-stones and several potsherds belonging to both the Neolithic and Bronze Ages ; a number of these sherds are similar to those found in the neighbourhood of Borg in-Nadur. The only two bits which bear incisions are the following :—

- (1) A bit of a red and grey colour of a fine texture, bearing two well-incised parallel lines on it. Depth about $2\frac{1}{2}$ feet from surface. (Pl. I, Fig. 2, No. 8.)

- (2) A sherd of a very coarse texture, having particles of shells in it. Its colour is a dark slate and the lines incised on it are very rough. Depth 2 feet. (Pl. I, Fig. 2, No. 12.)

3rd Layer.—This layer varied in depth from 9 inches to 1½ feet and consisted of a very fine red soil practically free from stones. Some boulders were, however, found embedded in the soil towards the inner part of the cave. Some deposits of whitish earth were also met with in this layer, varying in thickness from a few lines to over ½ foot; in one part one of these deposits was almost 1 foot thick.

The organic remains found were the following :—

Mammalia.

Pig.—One molar, almost at the surface.

Horse.—Several teeth found at various depths.

Cow.—Few teeth, also found at various depths.

Aves.

A few avian remains, which have not yet been identified, were also found at different depths.

Mollusca.

The land shells consisted practically of the same species that were met with in the foregoing layer, but I failed to find a single specimen of the species discovered by Cooke in his sixth trench, which was situated in the same locality occupied by a part of the trench under review. Count Caruana Gatto, who accompanied Cooke during the latter's excavations, assures me that the species alluded to was found in the locality above referred to.

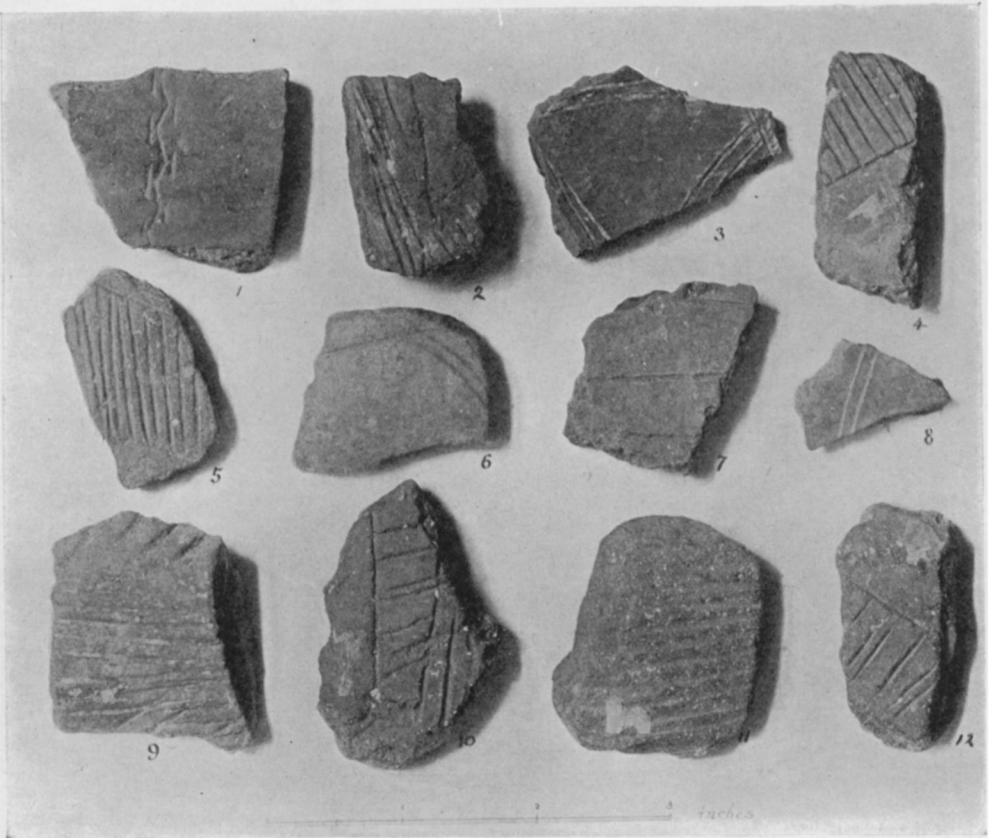
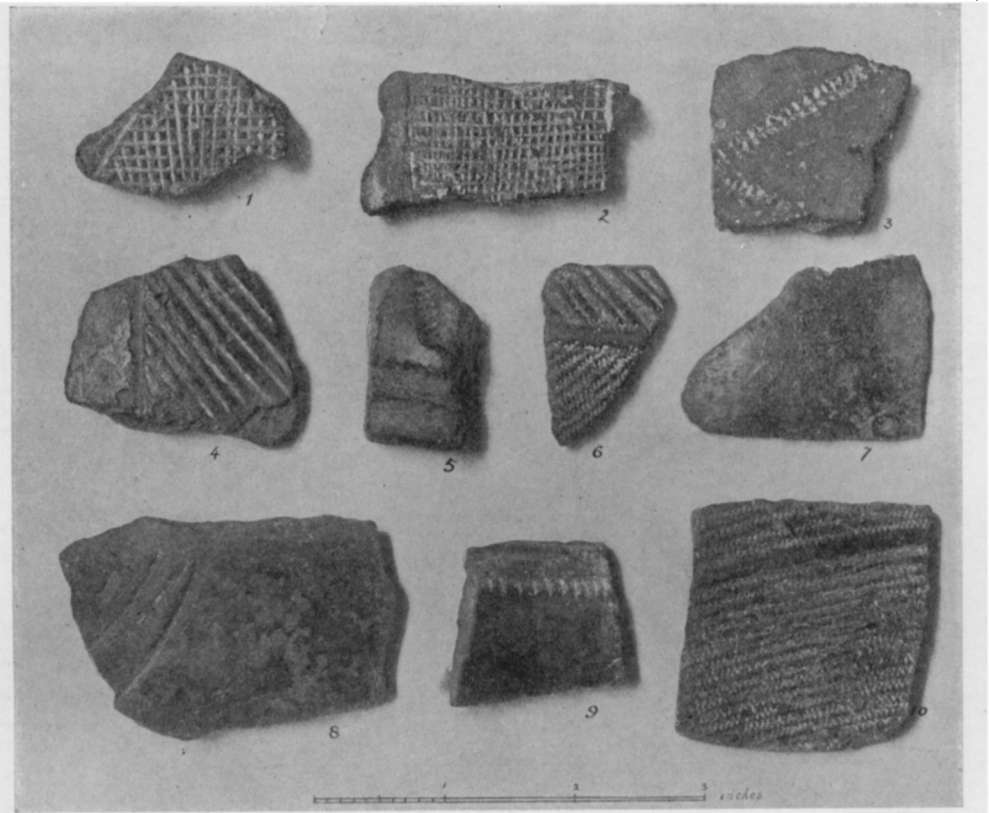
Tapes decussatus (Lin.).—A valve and some fragments at various depths.

Tritonium cutaceum (Von Salis).—Some broken specimens and many fragments found at different depths.

It is important to note that this species which was then evidently common and was undoubtedly used as food, is at present one of the rarest species of marine molluscs met with in our sea.

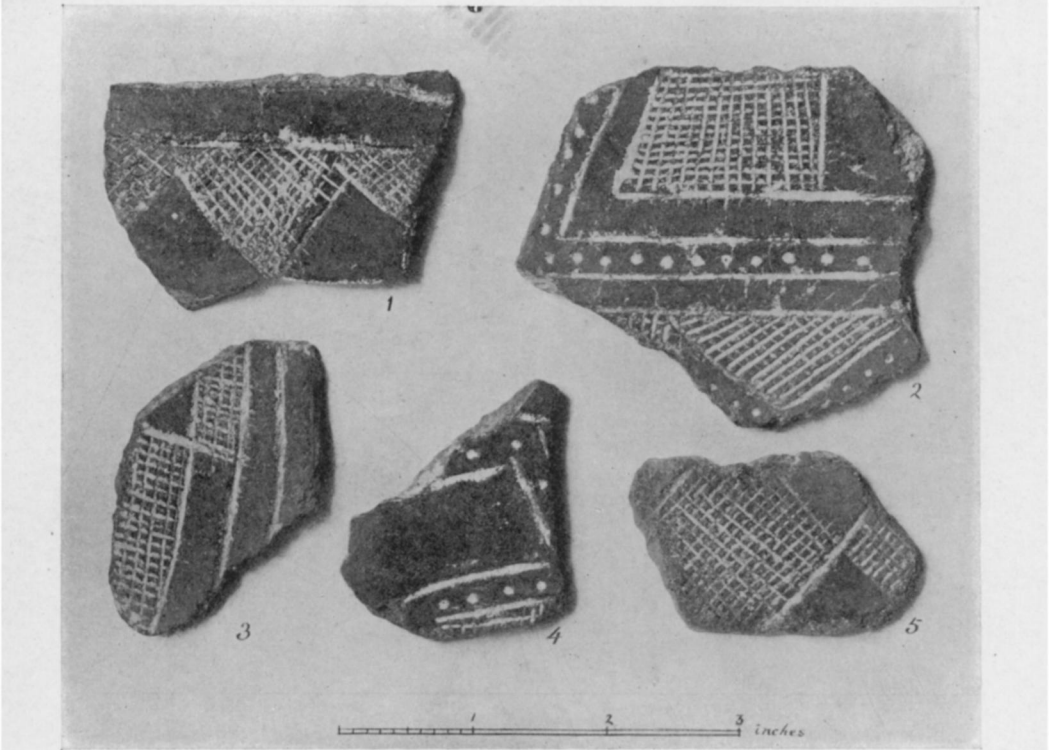
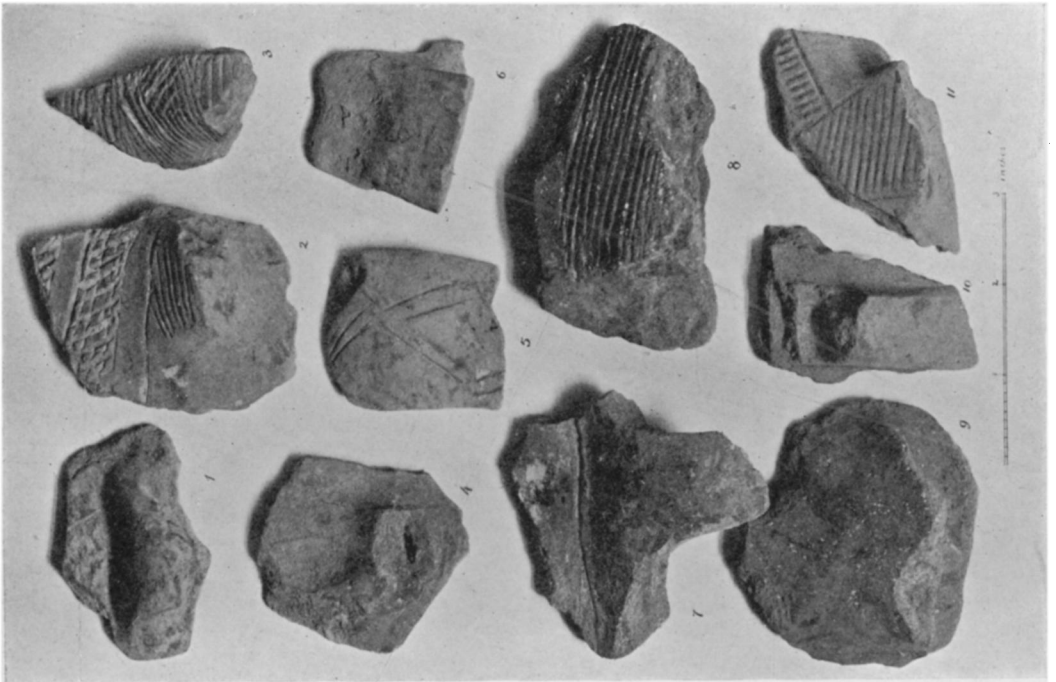
The artefacts consisted of Neolithic potsherds which do not merit special reference, some sling-stones and a piece of lava. Depth about 3 feet. The lava has three grooves cut on one side and was very probably used as a grinder.

4th Layer.—This varied in depth from 5 to 7 feet and consisted for the greater part of grey clayey earth, which in some parts was of the consistency of peat. In a part quite distinct from that where Cooke dug his sixth trench, the earth appeared to be displaced. I, therefore, discarded all the remains found in it.



FIGS. 1 AND 2.—POTTERY FRAGMENTS.

EXCAVATIONS AT GHAR DALAM (DALAM CAVE), MALTA.



FIGS. 1 AND 2.—POTTERY FRAGMENTS.

EXCAVATIONS AT GĦAR DALAM (DALAM CAVE), MALTA.

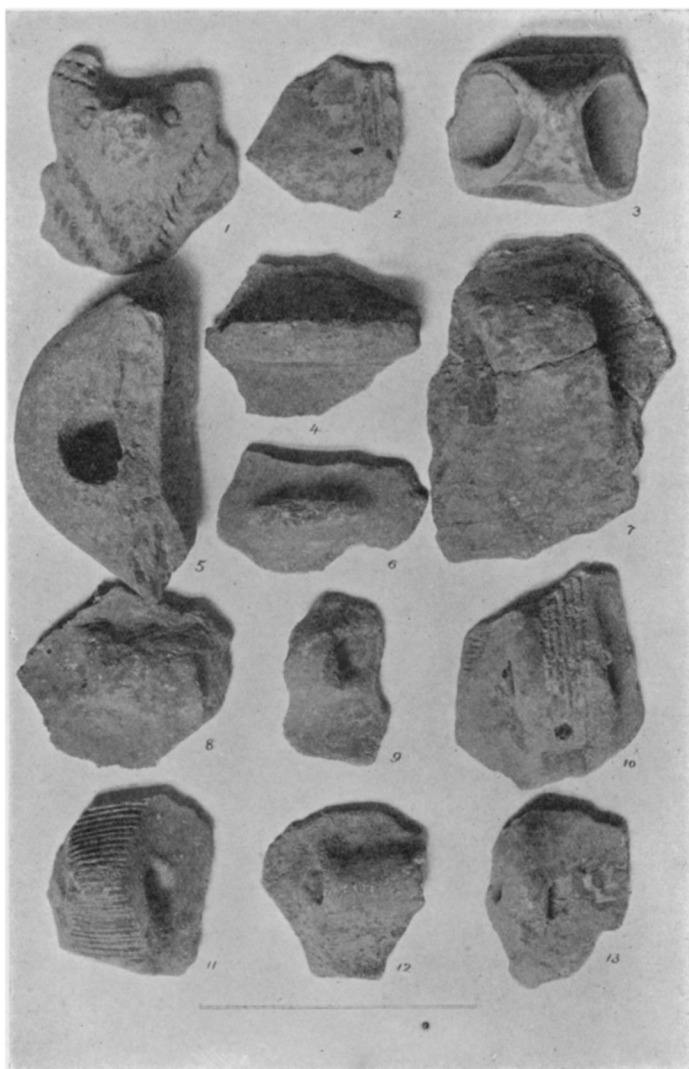


FIG. 1.—POTTERY FRAGMENTS.

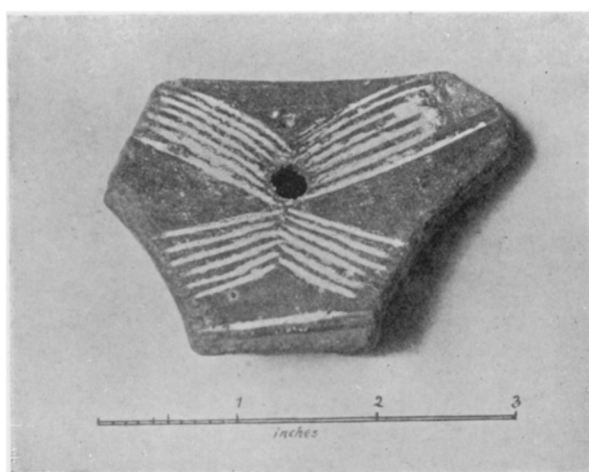


FIG. 2.

EXCAVATIONS AT GHAR DALAM (DALAM CAVE), MALTA.

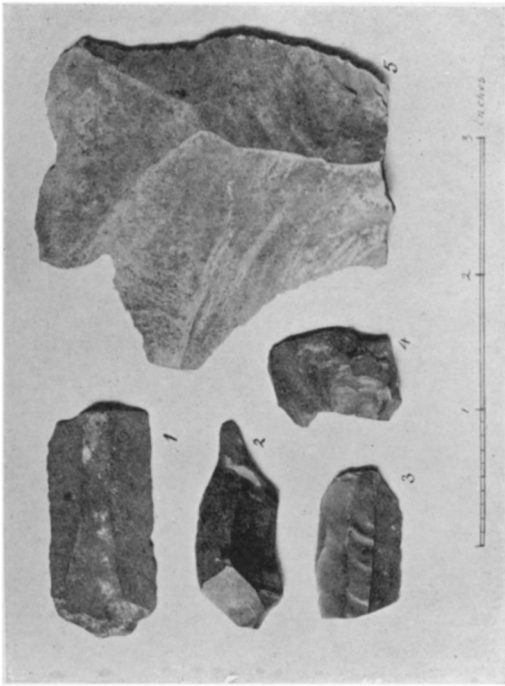


FIG. 2. (See pp. 24, 27, 33.)

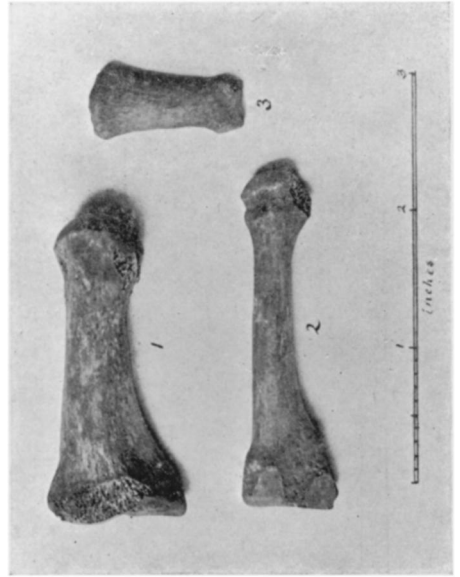


FIG. 4. (See p. 27.)



FIG. 1. (See p. 24.)

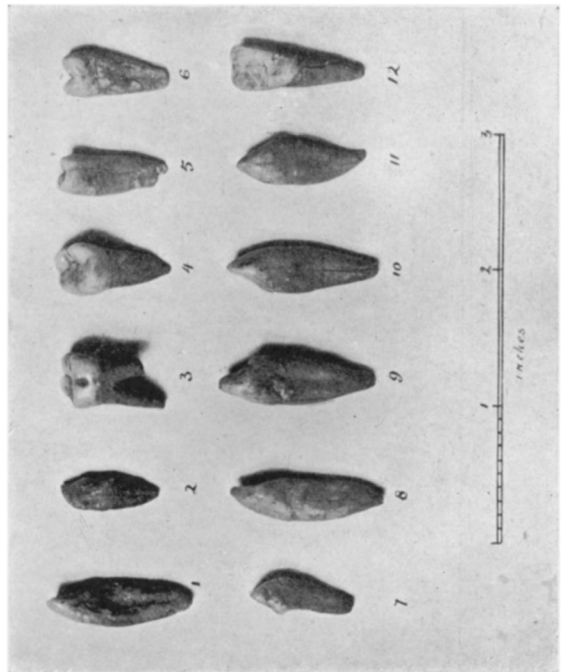


FIG. 3. (See pp. 25, 27.)

EXCAVATIONS AT GHAR DALAM (DALAM CAVE), MALTA.

The organic remains collected from this layer were the following :—

Mammalia.

Man.—One tooth. Depth about 6 feet from surface.

Deer.—Bones, teeth, and antlers, belonging to two distinct species, met with almost all through the whole layer, but only common towards the right-hand side.

Fox (?)—Remains of a fox, consisting principally of jaws and teeth. Depth varying from $5\frac{1}{2}$ to 7 feet or more from surface. These remains probably belong also to two distinct species.

Wolf (?)—A part of a mandible with two molars in a very good state of preservation. Depth about 5 feet from surface.

Hippopotamus.—Some very well preserved bones, at various depths probably lying in their anatomical position.

Aves.

A few bones of birds, not yet identified, met with at various depths.

Mollusca.

Tritonium cutaceum (Von Salis).—Fragments at a depth of 5 to 6 feet from surface.

Murex trunculus (Lin.).—Few bits found with the foregoing.

Cerithium vulgatum (Brug.).—Three broken specimens. Depth 5 to $5\frac{1}{2}$ feet.

Cardium rusticum (Chemn.).—Fragments more or less frequent at top of layer.

Cardium tuberculatum (Lin.).—A broken valve. Depth about 6 feet.

Patella caerulea (Lin.).—A specimen found at a depth of about $6\frac{1}{2}$ feet.

All the above marine mollusca were evidently used as food, as they are still used in Malta, except the *T. cutaceum* which, as already stated, is now very rare, and the *C. tuberculatum* which is also very scarce.

The artefacts consisted of a piece of chert with very fine edges, which could have perhaps served as a scraper. (Pl. IV, Fig. 2, No. 5.) Depth 5 feet.

5th Layer.—This layer, of which only about $3\frac{1}{2}$ feet have been excavated, consists of a grey loamy earth, with many pebbles and rounded boulders embedded.

The organic remains found in it were :—

Mammalia.

Deer.—Only a few bones in a very fragmentary state, mostly at top of layer.

Hippopotamus.—Bones, molars and tusks were quite abundant and some parts of the layer were literally packed with them. Some of these remains were in a very good state of preservation, most of them were very highly mineralized and unquestionably of great antiquity. Many were found crushed, but all the fragments still lying in their proper position. I have not, however, been able to find out what really caused such pressure as to crush them.

Elephants.—The remains of elephants were, here, also relatively plentiful. They consisted chiefly of rounded fragments of molars, and appeared to be of still greater antiquity than the remains of the hippopotamus. Evidently these elephants' remains had been rolled about a great deal before they were deposited in the place where they were now found. Amongst them two distinct species can be distinguished.

Several cartloads of animal remains have been extracted from this trench. Some time is, therefore, required for these remains to be properly examined.

THE INNER TRENCH.

This is separated from the middle trench by about 5 feet. It is about 18 feet long, 30 feet wide, and its greatest depth about 10 feet.

A group of very fine stalagmites stand on a solid rock in the middle of the chasm.

The layers vary considerably and differ to a great extent, especially from those of the middle trench.

The principal are the following :—

1st Layer.—Red soil with quite a number of small stones embedded in it. Depth 1 to 2 feet.

The organic remains in it consisted of some very friable bones belonging to the same species of domestic animals met with in the other trenches, and fragments of bones of deer, which are quite mineralized.

The artefacts consisted in sherds belonging to periods ranging from the Bronze to Punic Ages. None are, however, worthy of special mention, except perhaps a handle made of very rude pottery. (Pl. III, Fig. 1, No. 7.) Towards the inner part of this trench some stalagmitic deposits ran almost all through the width of the layer.

2nd Layer.—Fine red soil, practically free from stones or other material. Depth $1\frac{1}{2}$ to $2\frac{1}{2}$ feet.

3rd Layer.—Same sort of red soil, but full of small lumps of clayey material. A fragment of a handle was found at a depth of about $2\frac{1}{2}$ feet in this layer. This fragment is of a very coarse pottery of a slate colour, bearing some symmetrical lines which as usual are filled with a white material. The handle must have belonged to a moderately large sized vessel. (Pl. II, Fig. 1, No. 8.) As in the first layer

several stalagmitic strata of various thickness ran in this layer, especially towards the inner part of the cave.

4th Layer.—This consisted also of fine red earth, $\frac{1}{2}$ to 1 foot deep. Bones, antlers, and teeth of deer were frequently met with, some lay in juxtaposition and adhering together by means of stalagmitic infiltrations.

5th Layer.—A compact clayey earth or reddish colour, $2\frac{1}{2}$ to 5 feet deep; very unprolific.

6th Layer.—Composed practically of the same sort of soil. Scattered remains of both deer and hippopotamus were found in it, the latter being very abundant in some parts towards the bottom.

Broken stalactitic pendants of various shapes lay scattered in several parts of this trench in relative abundance. Very curiously no land shells were found in any of the layers, and yet that part of the middle trench where land shells, especially *Iberus*, were found so abundantly, is situated very near.

Some of the statements made in this report may seem rather puzzling, but such riddles are frequently met with in this cave. The portions of cave earth which I have left standing and untouched in their original position can, however, bear me evidence and tell their own tale to future explorers of Ghar Dalam.