

NEANDERTHAL MAN IN MALTA.

By SIR ARTHUR KEITH, F.R.S.

With an account of the survey of Dalam Cave (Ghar Dalam)
by MR. GEORGE SINCLAIR, A.M.I.C.E.

[WITH PLATES XXXIII AND XXXIV.]

IN the summer of 1918 a Committee of the Anthropological Section of the British Association met in the Conservator's Office at the College of Surgeons to arrange for the publication of reports from Research Committees. Among the reports received was one from Dr. G. Despott, Curator of the Natural History Museum, Malta, giving an account of excavations carried out in Ghar Dalam during July and August of 1917. These excavations were conducted on behalf of a Committee of the British Association, of which the Chairman was Professor J. L. Myers and the Secretary Dr. Thomas Ashby. Amongst the photographs which Dr. Despott submitted as illustrations for his report was one reproduced on Plate XXXIII. Eight teeth are represented; those numbered 1 and 2 are peculiar in shape; the remaining six conform in every respect to the types now prevalent in modern Europeans. A glance at this photograph was sufficient to convince anyone who had made a special study of teeth, particularly those of *Homo neanderthalensis*, that Nos. 1 and 2 belong to this strange species of man, and that Dr. Despott's discovery had carried the distribution of this species—already known at Gibraltar—right to the middle of the Mediterranean.

On reading over Dr. Despott's report, I was surprised to find that no trace whatsoever had been found in any part of Ghar Dalam of the culture of palæolithic man—nothing Mousterian, nothing Aurignacian—save a flint knife which I was told might be assigned as reasonably to the neolithic period as to the culture of the late cave period. The stratum of red cave earth which had yielded the teeth had also contained abundance of objects of the neolithic period—pottery, flint scrapers, bone instruments, ornaments, and others even of a later date. The 2nd molar occurred at a depth of only $2\frac{1}{2}$ feet (76 cm.) below the surface of the cave floor; the partially formed 3rd molar was a foot deeper in the same red earth deposit and nearly 7 feet (2 metres) away from the other.

With archæological evidence all against me, my letter to *Nature* (July 25th, 1918, p. 404), announcing the discovery of Neanderthal man in Malta, may have seemed foolhardy, and it may be well to give here the grounds on which my assurance

was based. In Fig. 1 (I) are represented the series of developmental stages which end in the formation of an upper molar tooth of the European type; in the lower series (II) are shown the corresponding stages which end in that peculiar type of molar which is found only in man of the Neanderthal type—the type of tooth to which I have proposed the name *taurodont*.¹ It will be seen that in both types (Fig. 1, A, A) the crown and neck are formed in exactly the same way. It is in the next stage (B, B) that a difference in the order of development appears; in the upper, the pulp cavity is being enclosed by a turning inwards of the growing margin of the dental wall; a floor or operculum is being thus formed. In C of the upper series the roots are being formed, the pulp cavity undergoing an extension downwards into them. In D (I) growth has ended; the roots are now completed. The floor or operculum of the pulp cavity, as may be seen from a comparison of stages in the upper series, becomes

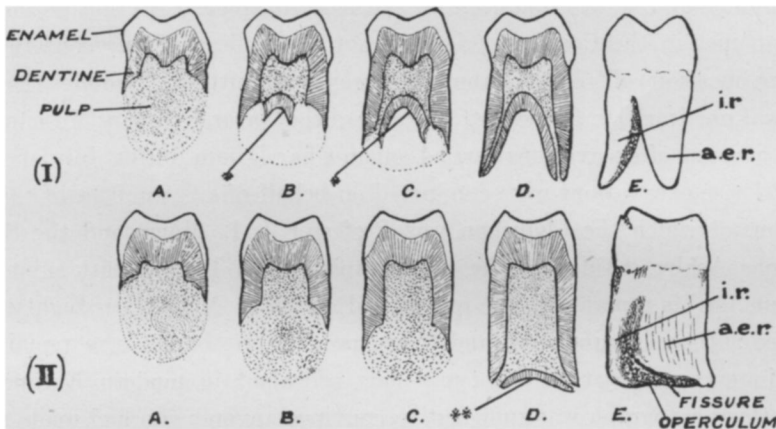


FIG. 1.—DEVELOPMENT OF ROOTS AND PULP CAVITY.

(I.) In an upper molar of European type.

(II.) In an upper molar of a type peculiar to Neanderthal man.

(I.) A, the crown and neck being formed on the pulp papilla; B, a further stage where the dentine turns inwards to form a floor for the pulp cavity; C, the formation of the separate roots; D, the roots completely formed; E, proximal aspect of 2nd upper right molar; *i.r.*, inner root; *a.e.r.*, proximal external root.

(II.) A, B, C, D, corresponding stages of the taurodont molar of Neanderthal man. The floor or operculum of the pulp cavity is not formed until the final stage of development is reached. E, the proximal aspect of the 2nd upper molar of right side which was found by Dr. Despott. A groove on this aspect indicates the junction of the internal and external root areas. The operculum is shown and the fissure of entrance to the pulp cavity.

extended in the roots to their tips. The only entrances to the pulp cavity are the three openings situated on the tips of the three roots. In the taurodont molar the formation of the floor of the pulp cavity, which takes place at stage B in the upper series, is delayed until stage D of the lower series. In this latter form, roots are not

¹ "Problems relating to the Teeth of the earlier forms of Prehistoric Man," *Proc. Roy. Soc. of Med.*, 1913, vol. 6 (Odontological Section), p. 1.

differentiated as separate structures. But their substance can be recognized on the body of the tooth (Fig. 1, E, *i.r.*, *a.e.r.*). The floor of the pulp cavity is developed at the bottom of the tooth, forming a door or operculum to the pulp cavity, its form being somewhat reminiscent of the trap-door of the nests of certain spiders. The nature of the taurodontal change in tooth formation may be explained by the use of a homely illustration. It is the fashion in Europe to separate the legs of trousers—which correspond to the roots of the teeth—up to the fork of the thighs. But there have been fashions where the seat of trousers, corresponding to the floor of the pulp cavity, has been carried down to the level of the knees, or even to the ankles. In teeth of the taurodont form the seat is carried to correspondingly low levels, or, as in this example from Ghar Dalam (Fig. 1, E), carried to the level of the ground and thus turned into a skirt.

Now, a tendency to taurodontism is present to a very limited degree in teeth found in men of the modern type; the tendency is always more marked in the third molars than in the first; it is more developed in lower molars than in the upper. But, after a long experience of actual specimens and a wide search of literature, I am convinced that a high grade of taurodontism never occurs in modern man;¹ in teeth of the modern type fusion of roots frequently happens, but this is a totally different state of matters. In the most marked examples of taurodontism I have ever seen in modern neolithic teeth, the roots, although fused together, yet had their independent root channels. Neanderthal man is the only type which shows a constant tendency to taurodontism. In the oldest example known, the teeth of the Heidelberg-jaw, the pulp cavities are relatively and absolutely large; in the teeth of the men of Spy the degree of taurodontism is not more than has been seen in teeth of palæolithic man of the European type. In the teeth of the Gibraltar skull only the tips of the roots have been differentiated; in this instance the degree of taurodontism has reached a characteristic amount. This was also the case in the teeth found by Dr. R. R. Marett in a Mousterian floor in Jersey. The most marked examples yet discovered were found at Krapina; among the Krapina upper molars there are teeth which are exact replicas in every respect of those found by Dr. Despott in Ghar Dalam. As Neanderthal people grow old and the crowns of their teeth become worn, the pulp cavity is filled up to a greater or less extent by the formation of new dentine. Thus, although taurodontism of a high degree is not present in every individual of the Neanderthal type, yet it is only in members of this race that high degrees of it have been observed. I am also of opinion that, as the Neanderthal type evolved, this curious feature of the teeth became more emphasized, and that taurodontism occurs in a high degree in the later generations of this race. Certainly taurodontism must be regarded as a change of a degenerative nature. At least, it is a character which is the opposite of being primitive or simian. If this inference is

¹ I have discovered, since this article was written, an instance of taurodontism in modern man. It is recorded by Dr. H. P. Pickerill, *Proc. Roy. Soc. of Med.*, 1908-9, vol. 2 (Odontological Section), p. 150.

right, then the Neanderthal people in Malta may be assigned to the later part of the history of this race—to the terminal phase of the period of Mousterian culture in Europe.

In the summer of 1918, as soon as I got to know of Dr. Despott's discovery, I proceeded to gather information concerning Ghar Dalam. I found that this cave was about five miles from Valletta and was situated on a bay, Marsa Scirocco, which indents the south-eastern corner of the island. From one of the inlets at the head of this bay, a rocky ravine—the Wied Dalam—cuts into the limestone plateau of the island in a north-westerly direction. After ascending this ravine from the shore for about 660 yards (220 metres), the traveller finds the mouth of the cave on his right hand, about 50 feet above the level of the sea. The cave, which varies in width from 20 to 60 feet and in height from 10 to 18 feet, runs in a north-easterly direction for 270 feet. At this point it branches in several directions, its total length

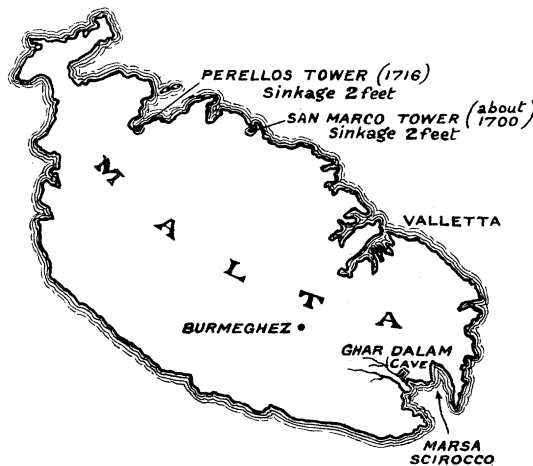


FIG. 2.—SHOWING THE POSITION OF GHAR DALAM AND OF BURMEGHEZ CAVE.

being over 700 feet. It has been formed in one of the basal strata of the island—coralline-limestone—and its direction will be observed to lie almost at right-angles to the ravine on which its mouth opens.

In the winter of 1912–13 an exploration was undertaken by Professor Tagliaferro and Dr. Despott, who cut a trench across the floor of the cave 350 feet from its entrance. In 1914 the exploration was taken over by a Committee of the British Association. Under its auspices Dr. Ashby, Dr. Zammit and Dr. Despott cut a cross-trench 200 feet from the entrance, and issued their report in *Man*, 1916, No. 14, p. 17. In this report a full account is given of excavation carried out in Ghar Dalam prior to 1914. The work of the Committee was continued by Dr. Despott, who in July, 1916, cut another cross-trench 115 feet from the entrance. His results were published in the *British Association Reports* for 1916. Then, in July and August, 1917,

Dr. Despott cut two fresh trenches across the floor of the cave—trench I at 50 feet from the entrance, and trench II at 110 feet. It was in trench II that the teeth to be described in this paper were discovered. Dr. Despott's account of these two trenches and what they revealed is published in this *Journal* (1918, vol. xlviii, p. 214).

The fact set out in the above account represents the state of knowledge of Ghar Dalam in the summer of 1918, when my letter was published in *Nature*. In this letter I appealed for funds to assist the Committee in its exploration of this vast cave, and thanks to liberal subscriptions from the late Sir Thomas Wrightson, Mr. Robert Mond and a few others, a sum of £130 was placed at the Committee's disposal, and thus, in 1918, 1919, 1920, Dr. Despott was able to explore the greater part of the floor of the cave between and also beyond the two trenches he cut in 1916—namely, that part of the floor which lies between the 50th foot from the entrance and the 140th foot. His report is published in this *Journal* (1923, vol. liii, p. 18). Although no further remains of palæolithic man were discovered, nor was any trace of his culture to be seen, yet the new facts which were thus gathered proved most helpful in unravelling the age of the cave and of the various deposits on its floor. Helpful, too, were the papers published by Miss Dorothy M. A. Bate in the *Proceedings of the Zoological Society of London* (1916, pp. 421–430) and in the *Geological Magazine* (1920, vol. lvii, p. 208), in which she describes the fossil remains of animals found in the deposits of Ghar Dalam. There has also appeared in the pages of this *Journal* (1922, vol. lii, p. 164) Dr. L. H. Dudley Buxton's valuable account of the people of Malta of Neolithic and of subsequent periods.

The circumstances, however, which have placed the most helpful facts at my disposal are these. Thanks to the courtesy of Dr. Zammit, Rector of the University of Malta, and of Dr. G. Despott, Curator of the Malta Natural History Museum, I have had now an opportunity of examining all the human teeth found in the strata of the cave, and of comparing their condition of fossilization with that of fossil bones from the deeper and older bone stratum of the cave. I may say at once that the mineralized condition of the teeth which I regard as Neanderthal is totally different from that of all the other human teeth. In their degree of mineralization these two teeth are in the same state as are the fossil bones from the upper part of the deepest and oldest fossil-bearing stratum of the cave. Further, in all their morphological characters these teeth are duplicates of types which occur in the Neanderthal race, at St. Brelade in Jersey and at Krapina in Croatia. Beyond a doubt Neanderthal man did exist in Malta, for we cannot conceive that a neolithic immigrant to Malta would gather such teeth from the deposits of a palæolithic cave and carry them to this cave in Malta.

Another fortunate circumstance came to my aid in 1921. My cousin, Mr. George Sinclair, an able civil engineer in the service of the Admiralty, was stationed in Malta. Being interested in palæolithic caves, Dr. Zammit suggested that he should

make an exact survey of Ghar Dalam—to expose its original rock floor, to determine the level of this floor to the sea, to chart the strata as determined by old trenches and as elucidated by the sinking of fresh ones, and to map out the sites at which former excavations had been made. In his holidays and leisure hours Mr. Sinclair threw himself into this task, and how completely he has carried it out will be seen from his report and plans printed at the end of this paper. He sank trenches between the mouth of the cave and the edge of the ravine (Wied Dalam), and was thus able to trace the strata and rock floor from the edge of the ravine into the cave. He sank a trench in the talus which had formed below the entrance to the cave. He dug trenches within the cave itself until its rock floor was reached. He found that the floor was almost on the same plane from end to end of the cave and that its level was 27 feet (8·2 m.) O.D. He correlated the deposits from end to end of the explored part of the cave and showed that they represent a series of deposits of four periods. His observations and measurements place data at our disposal whereby we are able to correlate the deposits in this Maltese cave with those in the palæolithic caves of Grimaldi, on the northern shore of the Mediterranean, near Mentone.

Mr. Sinclair rendered me another very important service. It was possible that the Maltese of the Neolithic period might have developed, as a local characteristic, a taurodontic condition of teeth, although such a condition had never been observed in any race of the modern type. Some 3 miles inland from Ghar Dalam, situated on the plateau of the island, about 300 feet O.D., is the village of Imkabba. Half a mile to the north of this village is Burmeghez, where the stratum of globigerina limestone is quarried (Fig. 2). As quarries are extended, great cave-like fissures are exposed in the rock. In 1913 one of these fissure-caves was exposed at Burmeghez; it was roughly triangular in section. Its apical part had opened on the surface of the ground at one time; red soil and other surface *débris* had been washed through the opening into the floor of the cave by rain-floods. Professor Tagliaferro found that neolithic man had also entered the cave at Burmeghez and had used it as a burial place. In 1914 the cave was again examined by Dr. Ashby and Dr. Despott; in the deeper strata remains of late pleistocene or early neolithic mammals were found. The Burmeghez cave is of the slanting crevice type; former investigators had left untouched the deposits in the recess at the extremity of the downward-slanting floor. To the excavation of this recess or pocket Mr. Sinclair applied himself. The pottery and objects of culture which it contained were identical to those found in the Hypogeum of Hal-Saffieni, which lies to the north of Burmeghez, midway between this quarry and Valletta. The skulls, most of them very imperfect, were of the same types as were found in the Hypogeum, and are therefore of a late neolithic people—the same people, so we may presume, who frequented Ghar Dalam in neolithic times. Mr. Sinclair gathered from this neolithic deposit 2,250 very perfect human teeth, which I have examined in detail. Interesting as the study of these teeth has been, all I need say now is that no trace of taurodontism was to be seen in

them. The form of degeneration which was present is that which we are familiar with in modern teeth—fusion and maldevelopments of the roots, particularly in those of the 3rd or “wisdom” molars. We cannot therefore attribute these taurodontic teeth from Ghar Dalam, even if their mineralization had been less complete, to neolithic men who lived in Ghar Dalam and buried their dead in its floor.

Before describing the two fossilized teeth it will be well, in the light of more recent observations made by Dr. Despott and Mr. Sinclair, to review the circumstances which attended their discovery, to discuss the age of the various strata of the cave, and the origin of the various objects which have been found in them. In Fig. 3 there is represented a section across the strata on the floor of the cave at the site where the Neanderthal molar teeth were found. The cave here is 29 feet wide and its strata almost 15 feet (4·5 m.) in depth. There are four series of deposits. (1) On

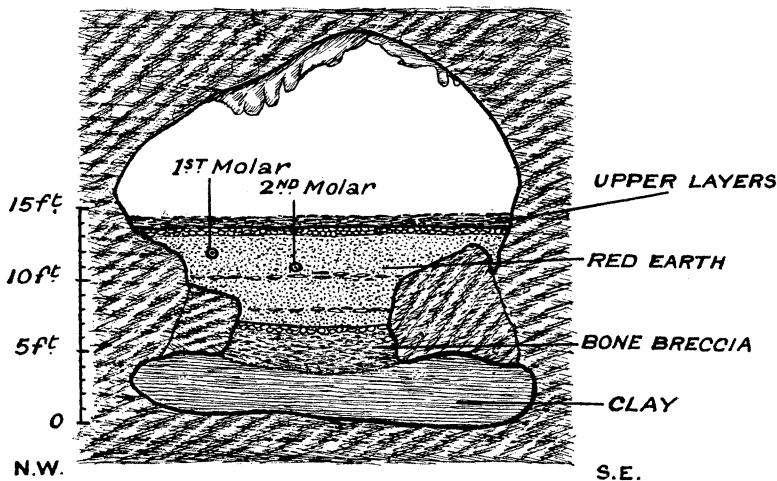


FIG. 3.—SECTION ACROSS GHAR DALAM AT THE SITE OF TRENCH II (110 FEET FROM ENTRANCE), WHERE THE NEANDERTHAL TEETH WERE EMBEDDED.

The points in the stratum of red cave earth where they were found are indicated. The section of strata here depicted is based on data given by Mr. Sinclair and Dr. Despott.

the floor of the cave, and occupying the recesses under the polished ledges which project from its side, is a deposit of yellowish-blue clay varying in thickness from 3 feet near the entrance of the cave to $2\frac{1}{2}$ feet towards its inner part. It is sterile; its upper stratum is hard. (2) Over the clay comes a bone breccia—rounded pebbles similar to those now on the shore of the neighbouring bay—and so thickly interspersed with fossil remains of three species of extinct elephants and two of hippopotamus that fossil bones make up 75 per cent. of the entire stratum. At the point of section (Fig. 3) this bed, including the boulder layer which caps it, measures 3 feet in thickness. Near the entrance to the cave the breccia layer has a depth of $3\frac{1}{2}$ feet; towards the back of the cave it tapers down to $1\frac{1}{2}$ feet. The fossil bones, as well as the pebbles, are water-rolled and smoothed, and when we remember that this stratum lies at the

level of 30 feet O.D., the same height above the Mediterranean as that occupied by the old sea-beaches of the Monastirian series round the shores of the Mediterranean, one may legitimately infer that the rolling of the component elements of the bone-breccia stratum goes back to the period of submergence when the Monastirian beaches were laid down. In the caves of Mentone the Monastirian beach is represented ; over it lies a deposit of the Mousterian period—the period of Neanderthal man. Over the Mousterian deposits at Mentone are those of the Aurignacian age. The fossil remains which were rolled into the breccia stratum in Ghar Dalam must have been remains of animals which had accumulated and become mineralized on the floor of the cave—before the period of Monastirian subsidence, before the Mousterian period, and before the coming of the Würm glaciation. These fossil remains of the bone breccia, then, may be of various ages, but the latest must belong, on Professor Boule's mode of classifying Quaternary deposits, to the lower Pleistocene.

(3) Over the bone breccia and its upper layer of rounded boulders comes the red cave-earth in which the molar teeth were found. At the point shown in Fig. 3 this deposit is 6 feet in thickness ; near the mouth of the cave it reaches a depth of 8 feet, while towards the back of the cave it tapers down to $4\frac{1}{2}$ feet. This deposit is imperfectly stratified ; usually two bone layers may be recognized in it—an upper and lower. In position and sequence it corresponds to the deposits of the Mousterian and Aurignacian periods in the floors of the Grimaldi caves at Mentone, and the nature of the fossil remains found in the cave earth is in harmony with this inference.

(4) The fourth, or superficial deposit, varies in thickness from $1\frac{1}{2}$ to 2 feet ; at the section shown in Fig. 3 it was $1\frac{1}{2}$ feet thick. In the superficial or neolithic stratum, at the site of section (Fig. 3) and towards the N.W. wall of the cave—on the left hand as one faces the back of the cave—Dr. Despott observed traces of several neolithic hearths. It is quite evident, too, that the neolithic people dug into and disturbed the upper parts of the underlying deposit of red cave earth ; shards of their pottery have been found as deep as $3\frac{1}{2}$ feet below the upper surface of the red cave earth. The Neanderthal molars lay at the same level as, and side by side with, the remains and objects of culture of neolithic man.

How, then, have teeth assigned to a race which became extinct in Europe with the Mousterian culture come to be mingled with the remains and culture of neolithic man ? In the upper feet of the red cave earth, in all parts of the cave, there has been found, side by side with neolithic pottery, fossil remains of *Hippopotamus pentlandi*, *H. minor*, *Elephas mnaidrensis*, besides innumerable remains of the stag, *Cervus elaphus barbatus*. In the lowest part of the cave earth, above the upper boulder layer of the bone breccia, has been found an intact mandible of *Elephas mnaidrensis*. In the deepest part of the red cave earth unrolled remains of this elephant are abundant ; in one trench, which was cut 4 feet deep in the cave earth, Dr. Despott found the skull of this elephant with the vertebræ of the neck in their natural relation to the skull, showing they came to lie there while still united by

ligaments and muscles. These animals were still alive in these ancient Maltese lands when the oldest deposits of the red clay earth were forming, and, as I infer, when Neanderthal man occupied a Mediterranean land now almost completely submerged.

The problem of the mix-up of diverse ages in the four upper feet of the red cave earth does not concern only those two molar teeth of Neanderthal man; they are in company with fossil remains of two extinct species of hippopotamus, of an extinct elephant, two varieties or species of stag, of a vole, of pleistocene birds and mollusca. Clearly the explanation is that neolithic man dug into the cave earth for several purposes and at many places. Here his dead were buried. At the side of the cave near to where Dr. Despott found the Neanderthal molars, but about two feet deeper in the cave earth, Mr. Sinclair found a lower human molar tooth—that of the present-day type of man. In its condition of preservation this molar was exactly similar to the teeth of deer obtained at the same level of the brick earth. Neolithic man had disturbed the natural records in the upper strata of red cave earth; but we do not, or should not, reject them as reliable documents on this account. As archæologists have had to do in many previous instances, we have in this case to unravel the confusion which neolithic man has wrought. A glance at the section depicted in Fig. 3 shows ledges which project from the sides of the cave; above the ledges are fissures and recesses in which remains derived from deposits older than the red cave earth may lurk. Mr. Sinclair found these recesses to contain fossil remains which, if disturbed, as they might have been by neolithic or palæolithic man, would fall into the upper strata of the red earth. It was in one of those upper recesses, filled with red cave earth, that Dr. Despott found the bones of a limb of *H. pentlandi*. Luckily for my present purpose, the condition of fossilization and the characters of crown and root differentiated these Neanderthal teeth from those of late palæolithic or neolithic man, with which they would have been confused otherwise. Further, their date is pleistocene—very probably mid-pleistocene, certainly post-Monastirian.

I now come to describe the two teeth. As already stated, they are hard, heavy and mineralized; the enamel is of a bluish dark opalescence; the neck and root are of a dull chalky grey. Although they were found nearly 7 feet apart and the one a foot deeper in the red cave earth than the other, there can be no doubt they are members of the same set of teeth. One of them had not completed its development at the time of death; its crown and neck are formed, the root part of its body (Pl. XXXIV, B²) is not yet developed. This molar was in process of eruption. The arrangement and conformation of cusps indicates that it was the 3rd molar of the right side; it is therefore from the mouth of a young individual, probably a male, about 16 or 17 years of age. The other tooth (Pl. XXXIV, A²), the one completely formed, but with cusps unworn save for an impression on the anterior border of the crown, is the 2nd upper molar, also of the right side. A comparison of the crowns of the two teeth leaves no doubt in my mind that this is the second member of the series of which the erupting molar formed the third and last of the series.

The following table gives the measurements of the teeth :—

- A. Medio-distal diameter of the crown.
- B. Labio-lingual diameter of the crown.
- C. Medio-distal diameter of the neck.
- D. Labio-lingual diameter of the neck.
- E. Height of crown, from tip of cusps to enamel margin of neck.
- F. Length of root, from enamel margin to bottom of root.
- G. Height of cusps above hollow of crown.

	A.	B.	C.	D.	E.	F.	G.
	mm.	mm.	mm.	mm.	mm.	mm.	mm.
M2	12	12	9·1	13	7·2	15·2	1·5
M3	10·7	12·5	9	13	7	6·7	1·1

Amongst the neolithic teeth I found a few which were 12 mm. or even 12·5 mm. in labio-lingual breadth ; several, too, almost equalled the medio-distal diameter of the two teeth here described. In none of these, however, did the labio-lingual diameter of the neck exceed the same measurement of the crown as in the case in these Neanderthal teeth. In none was there the same peculiar formation of body and root which these two teeth possess. The operculum, or shutter, of the 2nd molar measured 13 mm. by 10·2 mm. (Pl. XXXIV, A⁵). Round three of the borders of the operculum opens the fissure which leads to the pulp cavity. At its fourth border, the lingual border (*see* Pl. XXXIV, A⁵), the operculum is continuous with the dentine wall of the pulp cavity between the parts of the body which represent the anterior labial root and the lingual root. On the lingual aspect of the anterior internal cusp is a cingular cusp (Carabelli's cusp) (Pl. XXXIV, A²).

The enamel of the cusps is sharp and crystalline. In both teeth all four cusps are well developed, but the postero-internal cusp has a fuller development in the 2nd molar than in the 3rd. The details of cusp formation differ from those seen in the cusps of modern man, particularly as regards the size and length of the postero-internal cusps. These details may be studied in the faithful drawings made by Mr. Sewell and reproduced in Pl. XXXIV. In size and form such teeth have been seen in no race of mankind except *H. neanderthalensis* ; in condition of fossilization and in the fauna which kept them company, in the red cave earth in Ghar Dalam, they are in their proper pleistocene setting. So we may conclude with certainty that at one time there lived on a land now mostly submerged beneath the Mediterranean the peculiar race of men who inhabited a great part of Europe during a long stretch of the Pleistocene period. One aspect of this discovery is quite exceptional. At nearly all other sites where Neanderthal man has been found the remains of his culture have abounded ; but here no sign of his handiwork has been seen—only these two humble members of his dental series.

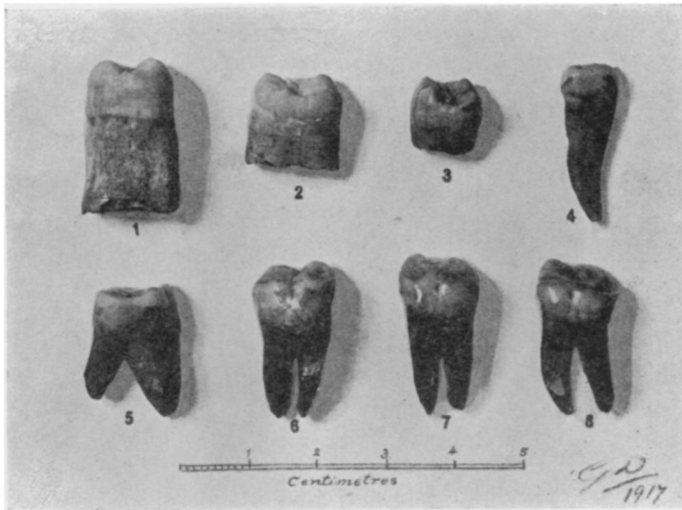


FIG. 1.

DR. DESPOTT'S PHOTOGRAPH OF TEETH FOUND DURING 1917 IN TRENCH II (110 FEET FROM THE MOUTH OF THE CAVE).

1. Distal or posterior aspect of 2nd upper molar of right side, assigned by the writer to *H. neanderthalensis*.
2. Distal aspect of 3rd upper molar of right side, almost certainly of the same individual; it is in process of development, the root portion being yet unformed.
3. 2nd upper milk molar of right side of 'European type' (an unerupted crown).
4. Proximal (anterior) view of 2nd lower premolar of left side.
5. Proximal surface of 1st upper molar of right side (European type).
- 6, 7, 8. Lower molars of European types:—
 - (6) M^2 , left lingual aspect.
 - (7) M^2 , left labial aspect.
 - (8) M^1 , left labial aspect.

NEANDERTHAL MAN IN MALTA.

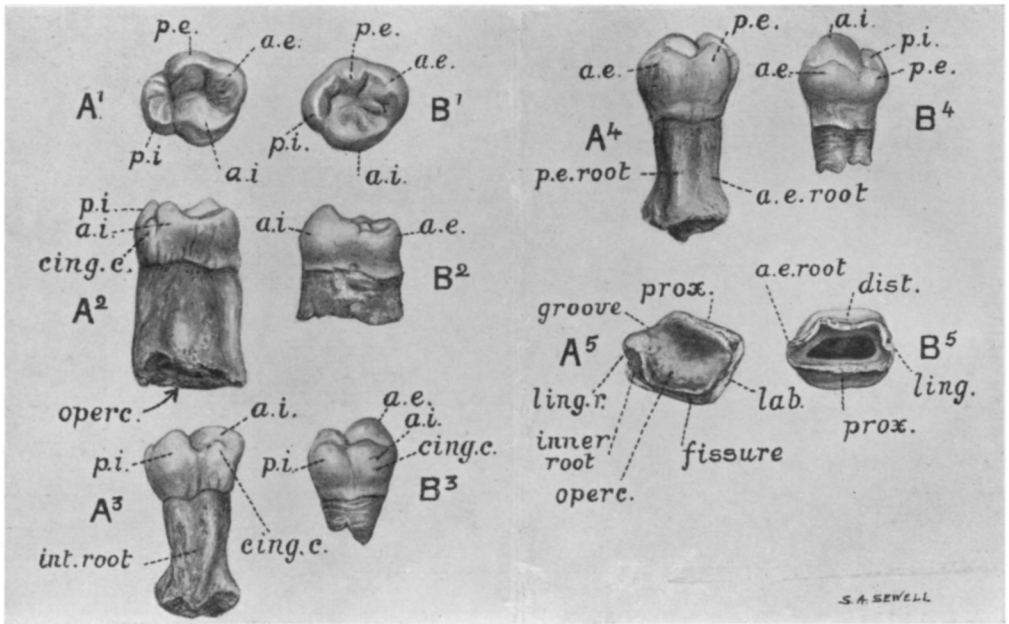


FIG. 1.

- A¹. Chewing aspect of crown of 2nd upper molar of the right side.
 B¹. Corresponding aspect of 3rd molar.
 a.e., antero-external cusp.
 a.i., antero-internal cusp.
 p.e., postero-external cusp.
 p.i., postero-internal cusp.
 A². Proximal or anterior aspect of 2nd molar.
 cing. c., cingular cusp.
 operc., operculum.
 Other letters as before.
 B². Corresponding aspect of 3rd molar.
 A³. Lingual inner aspect of 2nd molar; letters as before.
 B³. Lingual inner aspect of 3rd molar; letters as before.
 A⁴. Labial or outer aspect of 2nd molar; letters as before.
 B⁴. Labial or outer aspect of 3rd molar; letters as before.
 A⁵. Floor of pulp cavity or opercular aspect of 2nd molar.
 B⁵. Similar aspect of 3rd molar. The surface and roots are indicated.

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