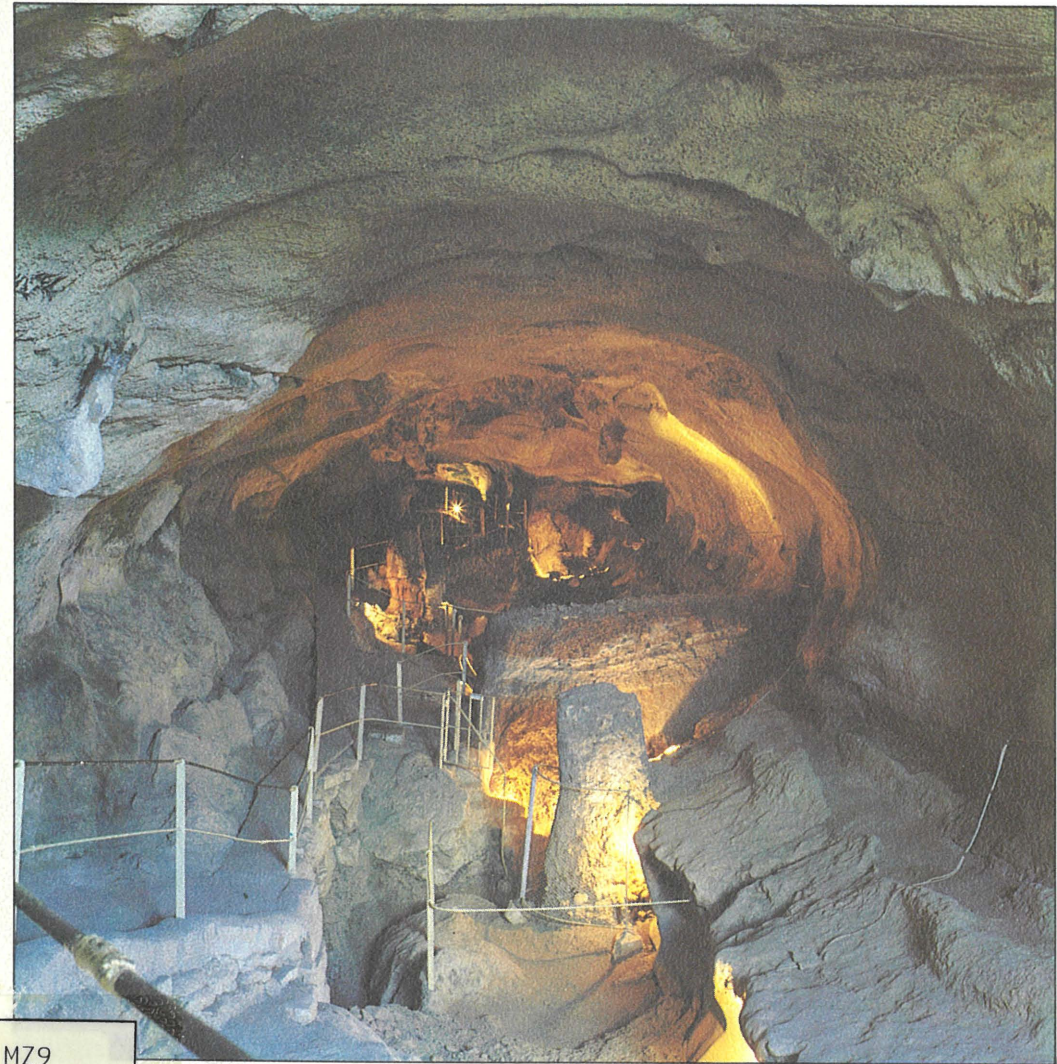
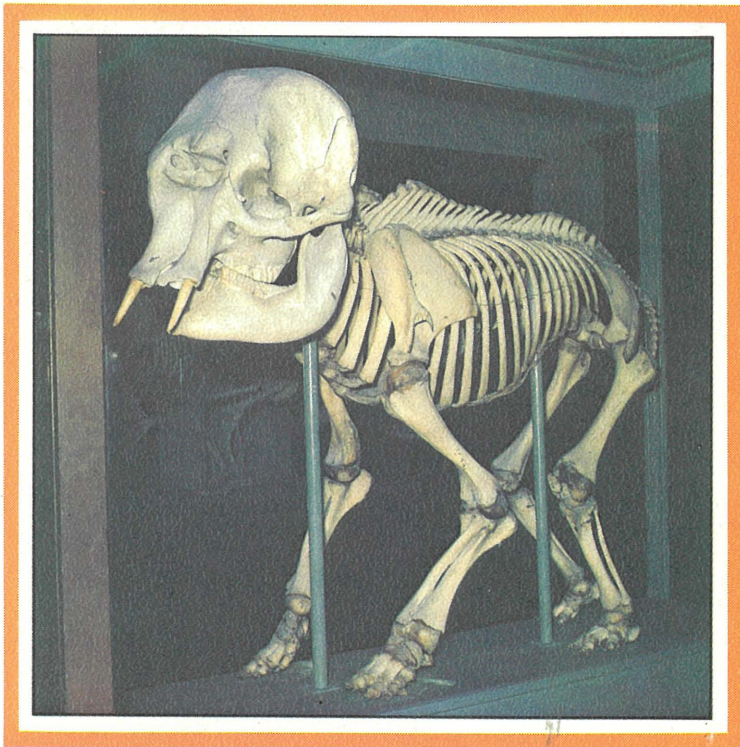


The Prehistoric Cave of **GĦAR DALAM**



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THE PREHISTORIC CAVE of GHAR DALAM

MARTIN MORANA

184100

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This booklet is dedicated to the memory of the late
Anġlu Agius,
for some time a custodian and guide at Ghar Dalam.

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Mr. Joseph Micallef of Birzebbugia for the correction of the final English text.
Colour photographs on covers of book are produced by the kind permission
of M.J. Publications.

Front cover photograph: Main gallery of cave with sample wall and pillar,
behind which are stalagmites and stalactites.

Back cover photographs: Pottery sherd in the shape of an animal head;
a recent skeleton representing approximate size of Dwarf Elephant.

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THE PREHISTORIC CAVE OF GHAR DALAM

FOSSIL SITES OF MALTA

The islands of Malta and Gozo are dotted with ancient monuments that bear witness to their being inhabited by various Mediterranean and European people. These usually regarded the islands as an important haven and a stepping stone when crossing the difficult expanse of water that fills this almost totally enclosed basin. Yet long before man had ventured on such navigation, Malta and Gozo had already been serving as a place of refuge for herds of animals that used to roam across Europe to which these islands had been connected. Although such fauna is no longer to be found in these latitudes, proof of their existence is now and then brought to light in the form of fossil remains from natural fissures or caves that are common in the Maltese rocks. Without doubt the most famous of these is Ghar Dalam, the so called Cave of Darkness (although *dulam* could be the Arabic word for elephant), situated in a valley on the outskirts of Birzebbugia.

Long before the Cave ever aroused the interest of archaeologists as a fossil site, prehistoric animal bones had already been found elsewhere on the islands. In 1647, G.F. Abela wrote in his "Della Descrittione di Malta" that huge bones had been discovered which were thought to belong to giants who once had built the megalithic temples.¹

The nineteenth century in Europe was characterised by the quest of scholars for wider knowledge regarding geological, anthropological and cultural sciences that were being increasingly stimulated by the discoveries and explorations of ancient sites. Many caves in Europe were being investigated for clues of human or animal habitation, while Darwin, the British naturalist, had by 1860 published his views that were later to be hotly debated, regarding the evolution of animal species, which theory he afterwards also applied to man.

1. Della Descrittione di Malta p. 145.

One of the earliest recorded discoveries of fossil bones was that of 1840: a cave at **Mellieha** was found to contain the bones of hippopotamus. In 1857, an elephant molar discovered at **Ta' Kandia quarry**, near Mqabba was presented to the natural history collection then housed at the Old University in Valletta. It is said that this find generated the first research of similar fossils.²

A few kilometres away, another quarry was being worked in, a year later, for the cutting of hardstone to be used in the construction of a new naval dock. The quarry was situated to the West of the Mnajdra megalithic temples. A fissure was struck open and numerous bones of hippopotamus were found. The site, known as **Maghlaq Cave**, was investigated by a Royal Navy captain, Thomas Spratt, a geologist then engaged in the soundings of the marine bed in the region off Malta.³ During the same year Spratt investigated also the cave at **Mellieha** as well as another fissure at **Zebbug**. This previously unknown fissure had been accidentally broken into as a cistern was being dug out. Inside, bones of elephants were discovered. "All these fragments bore evidence, more or less marked, of fierce gnawing by some carnivorous animal apparently not larger than a jackal".⁴

Between 1860 and 1866, a naturalist, Leith Adams, conducted many excavations in various places in Malta as well as a detailed study on the bones and dentition of the elephant-fossils. In 1862, he excavated the so called '**Middle Cave**', 60 metres East of Spratt's Maghlaq Cave and a few metres below the Mnajdra Gap, another site which he tackled the following year. The Middle Cave was conspicuous for the large quantity of giant dormice found, some of which measuring as much as three times larger than present day species. In the **Mnajdra Gap** the skeletons and teeth of up to fifty individual elephants were accounted for. In 1864, Adams excavated the bones of a dwarf elephant from **St. Leonard** fissure on the outskirts of Zabbar. During the same year he also dug up fossil remains at **Benghisa Gap** on the southern tip of Marsaxlokk harbour, where he unearthed bones of up to twenty-four individual elephants, two skeletons of which were almost complete. Other bones of dormice, frogs and tortoises were also discovered.⁵

2. Despott, Museum Annual Report, 1925, O, p.9.

3. It was he who discovered the submarine Medina bank which he named after his vessel 'The Medina', Spratt Maltese Bone-Caves, p.292.

4. Ibid. p.228.

5. Leith Adams, On the Osteology Of the Maltese Fossil Elephants pp.2-4.

A year later, in 1865, an Italo-German palaeontologist, Arturo Issel, during his stay in Malta got in touch with Leith Adams and even inquired as to the whereabouts of caves with possible traces of animal or human activity from prehistoric times. As Issel was in search of fossils he came across Ghar Dalam which was then being used by farmers as an improvised cattlepen having a rubble-wall built up some 18 metres inside the cave entrance barring animals from straying further in. Issel dug somewhere in the middle of the main gallery of the cave where at about 60 centimetres deep he picked up fragments of pottery, two phalanges of hippopotamus and a humerus bone of a wild sheep.⁶

Since this first recorded exploration, the cave has become synonymous with the discovery of fossil bones in Malta, as from it an infinite number of these were being brought to light.

IN THE BEGINNING

When visiting the cave and its museum that houses just a small portion of the vast amount of skeletal remains, the obvious question that immediately comes to one's mind would be regarding the age of the cave as well as that of the existence of the animals whose bones were found therein and that have since become extinct. While the answer for the latter would be involving thousands of years, the formation of the cave itself will probably go back to millions of years. Such figures do seem immense, almost unimaginable and therefore, in order to explain the story behind the cave and its contents, it is best to put them in their proper perspective by presenting them against the world's geological time scale.

To start with, it is nowadays believed that the earth has been in an uninterrupted development for the last 4,600 million years. The oldest recorded solids were located in Western Australia's sandstone, where crystals of zircon extracted from the rock are dated to 4,200 million years ago; the earliest continental rocks to some 3,800 years ago.⁷

To distinguish the various evolutionary stages that the earth and its inhabitants had undergone, it was convenient for scholars to divide this course of time into two **Eons**: The Precambrian, relating to the very beginning until 570 million years ago, and the Phanerozoic, which covers the years from then until now, when abundant organic remains were being deposited. These two Eons are subdivided into four **Eras**: The Proterozoic, Palaeozoic, Mesozoic and Cenozoic, the latter recording the story of the last 65 million years or so. This last era is made up of two

6. Arturo Issel, Note Sur Une Caverne a Ossements de Malte pp.2-3.

7. National Geographic, vol. 168, no.2, Aug. 1985, p.173.

Periods: The Tertiary and the Quaternary, which in turn are also segmented into various **Epochs** (see Chart below). However, it is with several of the younger epochs that we are mostly concerned when dealing with the explanation of the cave's formation, that is, with the upper (more recent) Tertiary and the Quaternary periods. Indeed, during the lower (earlier) Tertiary, Malta did not even exist, and the Mediterranean Sea was still part of a vast ocean that is known to scholars as the Sea of Tethys.

ERA	PERIOD	EPOCH	PRINCIPAL EVENTS	
CENOZOIC (recent life)	QUATERNARY	HOLOCENE (very recent) started 10,000 years ago.	The present interglacial stage – Man the farmer emerged.	
		2	PLEISTOCENE (most recent)	Ice Ages – evolution in modern man – animals and plants.
	TERTIARY	7	PLIOCENE (more recent)	Malta emerges above sea surface – first appearance of true hominids – modern plants.
		26	MIOCENE (moderately recent)	Rise of Alps – formation of Maltese islands – many primates.
		38	OLIGOCENE (slightly recent)	First modern mammals – giant running birds – extinction of early Tertiary plants.
		54	EOCENE (dawn of recent)	Earliest ancestors of horse, whale, rodent, elephant.
		65	PALAEOCENE (Early dawn of recent)	Rise of mammals and flowering plants – first modern gastropods.
		Millions of years		

Geological Time – Scale of the Cenozoic

MEZOSOIC			

According to the **Continental Drift Theory**, the landmass of Africa moved in a collision course with that of Europe so that during the Miocene epoch the Mediterranean was shaped into an enclosed sea. Sometime at the beginning of the Pliocene epoch this sea dried up almost completely resulting in the extinction of most marine creatures. This is proven by the salt deposits that sometimes are two kilometres thick.⁸ It was probably then that the Maltese islands began to emerge after having gradually formed of sedimentary material that had accumulated and solidified into five distinct layers of rock.

During the Miocene epoch the accumulating sediments trapped inside them all sorts of marine organic matter which is to be observed in the local rock as fossils. Strange to say, however, fossils of terrestrial animals have also turned up, though rarely, in the Maltese rocks, such as the molar of a *Trilophodon angustidens*, a type of **mastodon** common to the Miocene epoch.⁹ (see fig. 1)

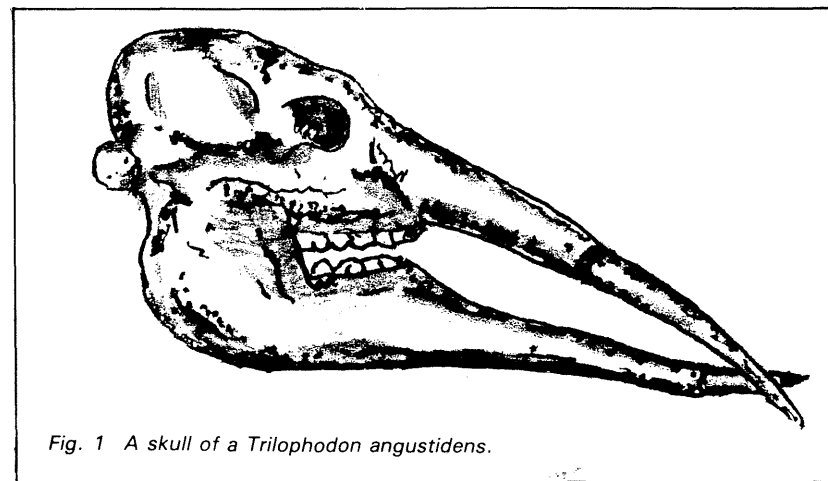


Fig. 1 A skull of a *Trilophodon angustidens*.

After the relatively dry spell at the start of the Pliocene, the Mediterranean was again filled with water that must have entered through the Straits of Gibraltar from the Atlantic, bringing with it a return of marine life.¹⁰ This same water must have eventually isolated the Maltese land

8. See History of the Med. Salinity Crisis in Nature Vol. 2. 2.6.77

9. G. Maempel, A cast of such a molar is exhibited in the Fossils Hall at the Natural History Museum in Mdina.

10. See footnote no. 8.

scape in the middle of the Mediterranean Sea. The subsequent Pleistocene epoch marks the return of terrestrial life on Malta under different circumstances. The fossil bones pertaining to this epoch are not to be gathered from the rock itself anymore, but rather from alluvial deposits that had accumulated in rock fissures and caves similar to Ghar Dalam.

FORMATION OF GHAR DALAM

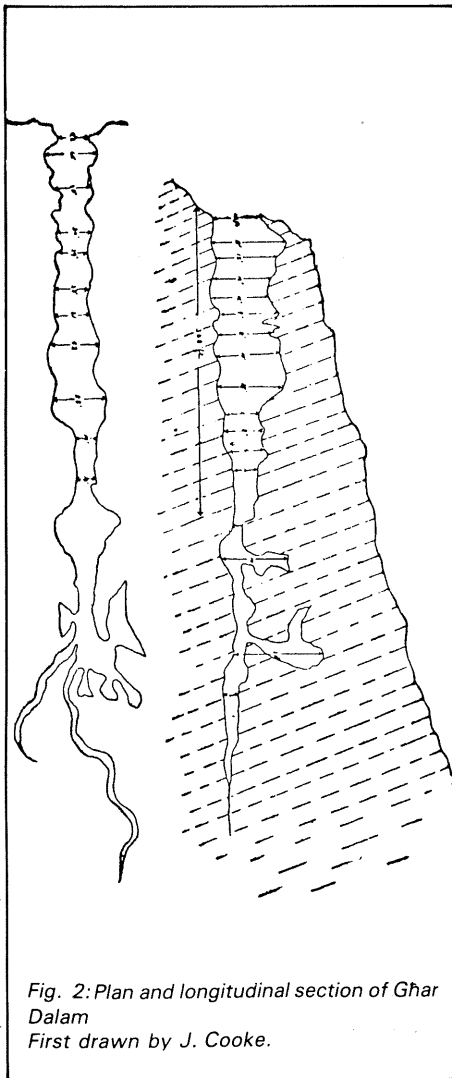


Fig. 2: Plan and longitudinal section of Ghar Dalam
First drawn by J. Cooke.

This cave, located at Wied Dalam, is a hollow inside the Lower Coral-line, the same type of rock from which the valley too is carved out. The valley runs on a course from Għaxaq village about two kilometres to the Northwest and winds its way in a Southeasterly direction downwards to San Gorg creek in Marsaxlokk harbour. The cave mouth opens at right angles on the Northeasterly side of the valley about half a kilometre before reaching the coastline. The **main gallery** of the cave runs for some 140 metres (of which only the first 80 metres or so are accessible to the visitor), inside the hill in the direction of and underneath the busy road that leads to Birzebbugia. The next 15 metres or so are occupied by the **intermediate passages** which lead to the **embranchments** of which the longest fissure ends as a blind alley some 60 metres further on. The forepart of the main gallery, averages between 8 and 10 metres in breadth, while the height from the rock bottom varies from 5 to 8 metres.¹¹ The enlargement of this cavern has been attributed mainly to the constant attrition of running water before this under-

11. J. Cooke, Har Dalam Cavern, p.9.

ground fissure was broken into by another stream from Wied Dalam; hence the deep central canal that runs inside the cave and the smooth round walls and ceiling. Before then the long **tubular tunnel** had once stretched across the valley and reached the other side, where even now a small opening in the valley wall is still to be seen facing the cave entrance from the right opposite.

Then, only finely laminated clay could find its way through very narrow crevices in the ceiling and this accumulated up to the first two metres in height from the rock bottom of the cave.

At places, the valley walls drop at a vertical angle, indicating that the water that eroded the cave had also shaped and deepened the valley floor. This same force had either suddenly or maybe gradually broken into the tunnel that crossed its path, rendering it wide open to form two separate caves, into which all sorts of material that was in the river bed began to be diverted.

The water that percolated through the cave's limestone roof drops at certain points in the ceiling to produce the thick stalactites and stalagmites. (deposits of calcium carbonate as the water evaporates).

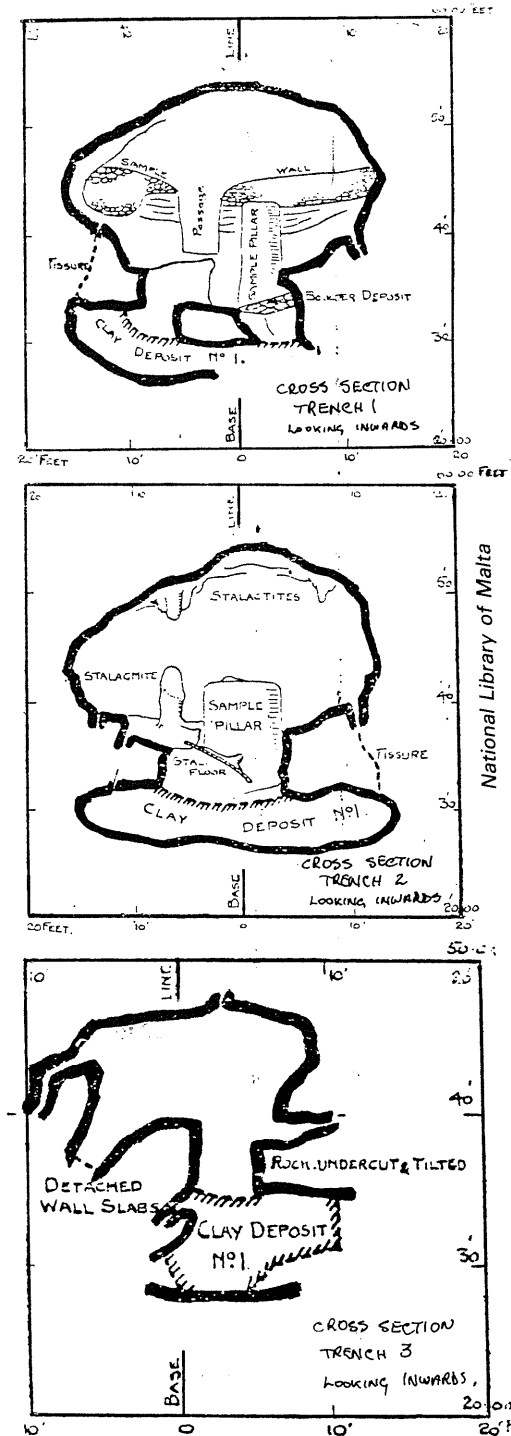


Fig. 3:
Three Cross-Sections made by G. Sinclair at sites of trenches (marked 1, 2, 3, on plan in centre pages.)

THE EUROPEAN PLEISTOCENE FAUNA

As this material was being dug out from the cave, the continuous discovery of enormous quantities of red deer bones as well as bones of hippopotami, not to mention those belonging to other species, like elephants, brown bears, wolves, foxes and giant swans, made archaeologists hypothesise about a land connection to one or both of the nearest continental mainlands. Such fossils similar to those being found in the cave were to be met with not only on other Mediterranean islands and bordering countries but also right in the heart of Europe.

All over the West European mainland, for instance, there are no less than 350 different known sites that prove the existence of the hippopotamus during the Quaternary period. Many caves in Europe have yielded bones of animals that either no longer inhabit such latitudes or else have become extinct. The woolly mammoth and the giant cave bear were also two of the more outstanding creatures of the Quaternary.

The same fauna flourished even in the British Isles. At Tornewton Cave in Devon, more than 20,000 teeth of hyenas were found, while a little further away at Torquay, Kent's Cavern is famous for the quasi-legendary sabre-toothed tiger and for the woolly rhinoceros. The latter survived in Britain up to some 22,000 years ago and may be traced up to Caldy Island in Wales. Animals such as these were often depicted by palaeolithic man.

Between Rome and Sicily there lived different types of elephants: the *Elephas primigenius*, *Elephas antiquus*, *Elephas meridionalis*; while in Sicily the *Elephas armeniacus* was barely distinguishable from the present Asiatic elephant.¹²

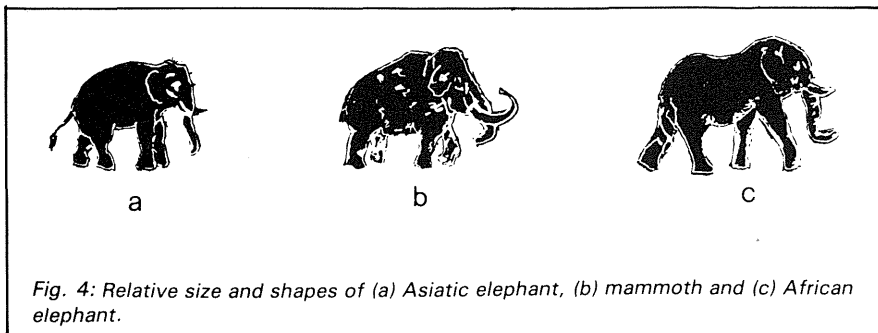


Fig. 4: Relative size and shapes of (a) Asiatic elephant, (b) mammoth and (c) African elephant.

12. L. Adams, Concluding Report On the Maltese Fossil Elephant p. 187.

THE ICE AGES

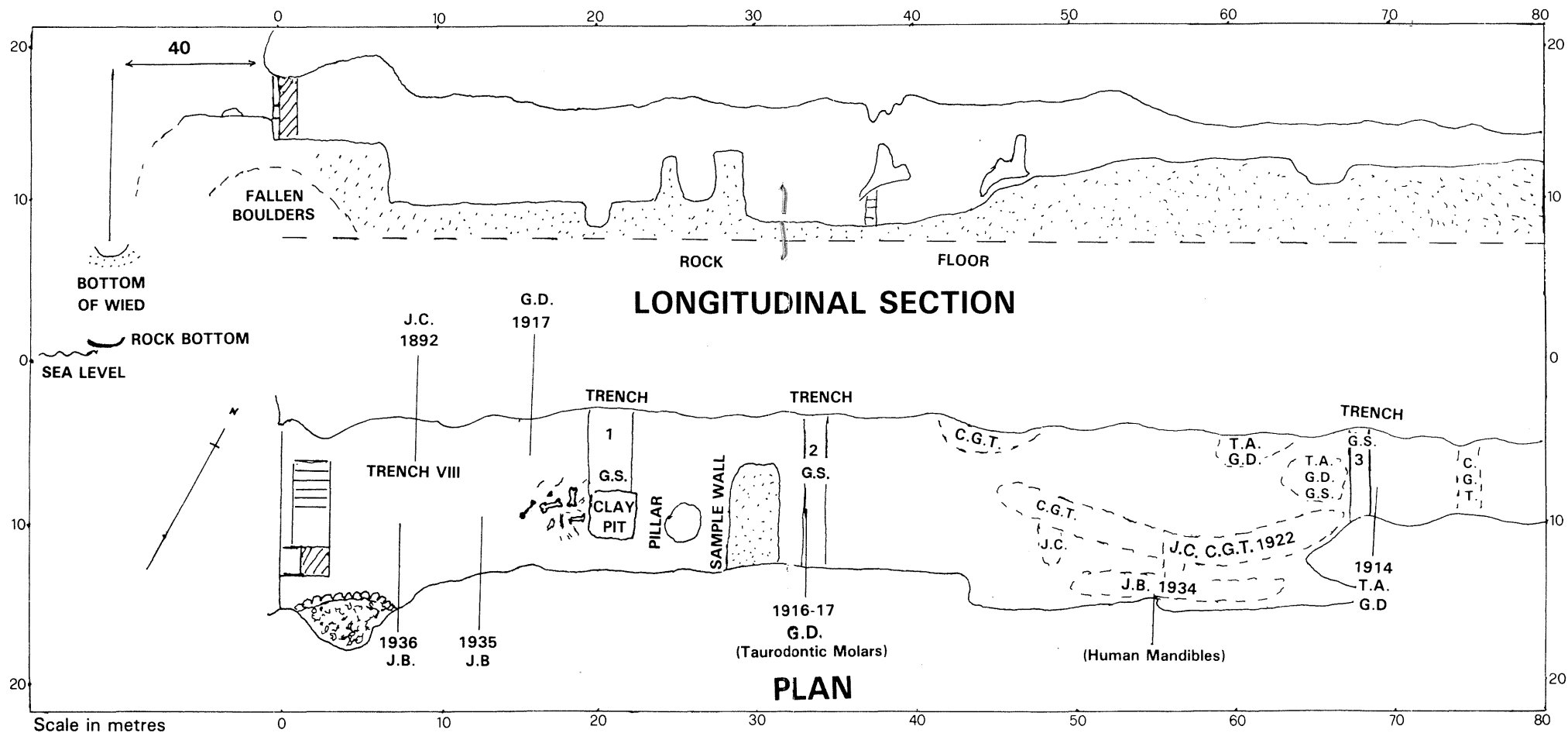
During the first half of the nineteenth century, the idea that the North polar ice cap could have once extended itself southward, began to take root and became accepted by the time Ghar Dalam was discovered. In explaining the contributory factors for ice ages to occur whether periodically or by chance, one still has to enter a battlefield of conflicting theories. Possible stimulating conditions would have been: (i) a decrease of carbon dioxide in the atmosphere which normally retains the sun's heat from floating back into space, (ii) a decrease in heat emitted from the earth's core, (iii) deviation of the warm North Atlantic Drift current that usually affects the North polar ice sheet. Momentarily, however, it is the "Astronomical Theory" which is gaining most acceptance. This theory involves the periodical geometrical interplay between the earth and the sun as well as a tilting and wobbling shift in the earth's axis which affect temperatures at the poles. Any of these and/or other possible happenings could have triggered off an ever increasing albedo (light reflected from white surface area) of snow, which then reflected the sun's rays back into space resulting in lack of heat and lowering of temperatures.

In 1909 two German geographers, A. Penck and E. Brückner, published a book 'Die Alpen im Eiszeitalter' (The Alps in the Ice Ages) in which they claimed four different ice ages to have occurred during the Pleistocene epoch. These they named after four river valleys in the region of the Alps where they had observed indications of such phenomenon. Thus, the youngest Ice Age was named the Würm, this was preceded by the Riss, Mindel and Günz respectively. Another Ice Age was later attributed to an earlier stage by Eberl, another German scholar, and was named the Donau. Altogether these came to be regarded as the classical ice ages each divided from the next by a period of warmer temperatures known as the Inter-glacials. Yet in the Netherlands no less than eight cold stages¹⁴ have been recognised, while nowadays some seventeen glacial stages could be considered to have occurred during the last two million years or so.¹⁵

13. For a more in-depth study on the causes of Ice Ages read 'Ice Ages...Solving The Mystery' (pub. 1979) by J & K. Palmer Imbrie pp.61-68. Read also 'The Winters of the World' (pub. 1979) ed. by Brian S. John, pp.33-57.

14. Brian S. John, The Ice Age, Past & Present (pub. 1977) p.146

15. Brian S. John, The Winters of the World, p.9.



MAJOR EXCAVATIONS & DATES

(Cross section of Trenches 1,2,3 are on page 9)

ARCHAEOLOGISTS

T.A.: THOMAS ASHBY
 J.B.: JOSEPH BALDACCHINO
 J.C.: JOHN COOKE
 G.D.: GUSEPPI DESPOTT
 G.S.: GEORGE SINCLAIR
 C.G.T.: CATIE G. THOMPSON

WHAT HAPPENED THEN

One of the first consequences of an uninterrupted lowering of temperatures which lasted for more than the normal seasonal duration, would have been the spreading of the continental ice sheets. In this way, the Scandinavian ice sheet grew more extensively and spread into Denmark, large parts of Germany, Poland and the Soviet Union. The ice caps of the Alps and other mountainous regions flourished on lower grounds. In all, some eighteen million square kilometres that today are free from ice were then barren land. Beyond this frozen land, there was a vast tundra belt where only shrub grew. Meantime the Mediterranean coastline is considered to have become a very narrow forest zone. Worldwide, sea levels shrank by an average of 100-120 metres in depth.¹⁶ While the ice sheets connected the mainland of Asia with that of America across the Bering Strait, the British Isles became also linked to Europe. The Maltese Archipelago too became part of an exposed continental ridge joined to Sicily and Italy as the Mediterranean Sea separated itself into various lakes. This was due to the fact that evaporated water from the sea was not being returned as rain but was retained instead as snow which eventually turned into solid ice. A large concentration of salt, colder sea temperatures and other effects were registered in living foraminifera (an order of small single-celled animals) which is to be found in and studied from different sea sediments related to the various cold and warm stages. At the onset of a fresh ice age the interglacial fauna had to either **adapt** itself physiologically to the adverse climatic conditions or **migrate** to warmer latitudes or else become **extinct**.

THE PLEISTOCENE FAUNA IN MALTA

The earliest migratory herds that travelled South and crossed the plateau from Sicily to Malta consisted mostly of hippopotami and elephants, proving that at the time there was abundant vegetation and fresh water about to sustain them. Beyond these hilly grounds, on the Southern side lay the 'Malta Trough' today averaging some 1000 metres below the surface but then having remained partially filled with water, barred these herds from continuing any further on their route in search of warmer climate and new pasture lands. (see fig. 5)

From the many Pleistocene sites in Malta two distinct type of hippopotamus could be recognised: (*Hippopotamus pentlandi* and *H. minutus*) both smaller in stature than their more ancient relative the H.

16. J. & K. Palmer Imbrie The Ice Ages...p.11)

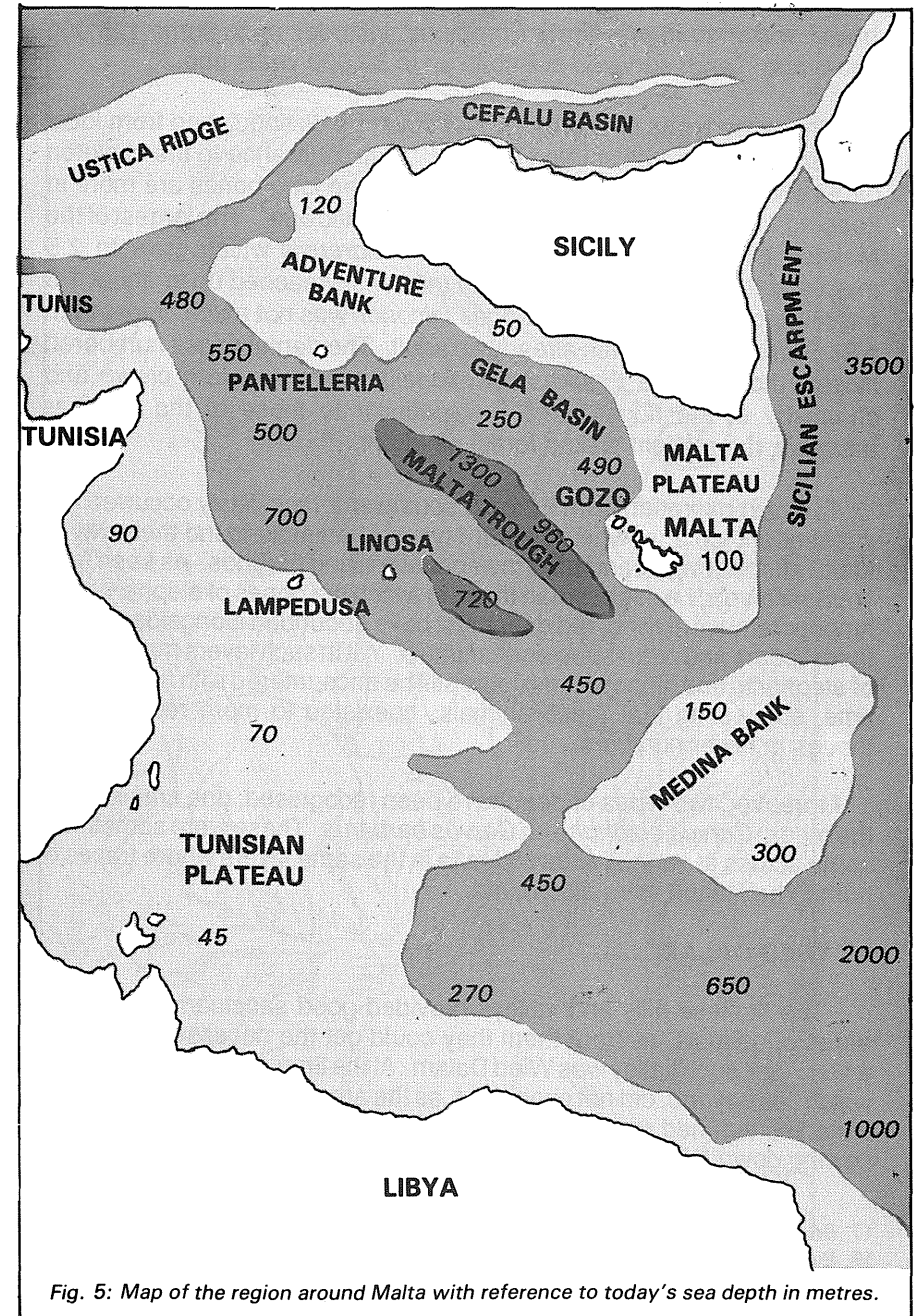


Fig. 5: Map of the region around Malta with reference to today's sea depth in metres.

major which roamed North European latitudes up to some 125,000 years ago,¹⁷ and survived in Britain up to 80,000 years ago.¹⁸

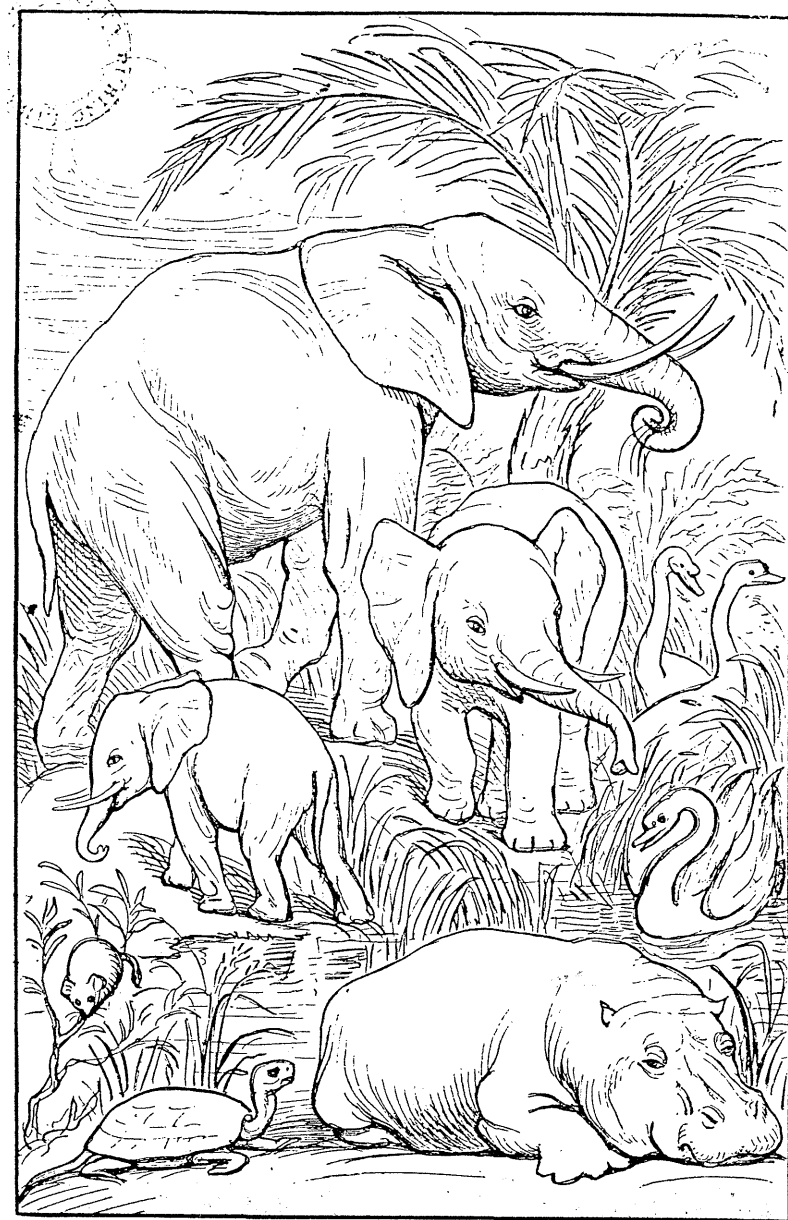
The three types of elephants that could be distinguished from local deposits were also all stunted in form. "With reference to the skeleton generally the majority of the characters of the long bones are more in keeping with the African elephant than the Asiatic one". The largest of the Maltese elephants was the *Elephas mnaidrensis* which grew to 2.5 metres at the shoulder; the *Elephas melitensis* reached up to about 1.5 metres, while the dwarfest, *Elephas falconeri* was not much bigger than a St. Bernard's dog when already an adult. The dental ridges numbered closely those of the *Elephas meridionalis*, while the worn crown and chemistry of the ridges were more similar to those of the *Elephas antiquus*, the straight tusked forest elephant.¹⁹

The next migration from Europe, southward, most likely occurred in a subsequent ice age, when different types of animals found their way to Malta after having abandoned their usual grazing grounds. As seen from younger levels, i.e. higher than those in which the bones of elephants and hippopotami were lying, red deer must have abounded alongside wolves, foxes, bears and other species of animals. Yet in such layers many bones of elephants and hippopotami could still be encountered with from time to time, suggesting that these animals coexisted to more recent times though in fewer numbers.

Moreover, two types of deer have been recognised, one smaller than the other: *Cervus elaphus* and *Cervus barbarus*. These were sometimes come across at various sites on Malta in the same layers where traces of human habitation were also found.

AT WIED DALAM

The Maltese hills and valleys provided good sanctuaries for these herds of animals, as from them they could get the necessary food and water. One such valley was Wied Dalam. At the time, Marsaxlokk harbour which lies beyond, did not even exist, as the area was then well above the waterline that had receded.²⁰ Instead it served as an outlet for waters flowing down Wied Dalam and several other nearby valleys.



National Library of Malta

17. Brian S. John, *The Winters of the World*, p.214.

18. Bjorn Kurten, *The Age of Mammals* (1971) p. 201

19. L. Adams, *Concluding Report On the Maltese Fossil Elephant*, pp. 185-186.

20. The present Maximum depth of sea water at Marsaxlokk harbour is 30 metres.

Fig.6 Drawing from Leith Adams' Book 'The Nile Valley and Malta' (1870)

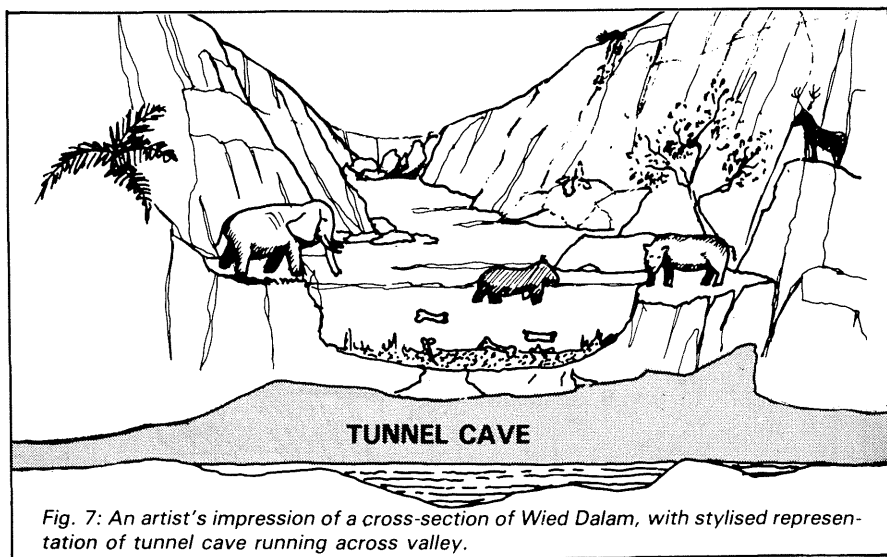


Fig. 7: An artist's impression of a cross-section of Wied Dalam, with stylised representation of tunnel cave running across valley.

The cave's main tubular gallery crossed the valley at right angles and was completely closed to the outside world, most of the time submerged by water from the valley stream. Thus the cave was not accessible for the animals who frequented the valley in search of food. Those animals that died in the vicinity of the water-course had their carcasses or skeletal remains washed away by occasional flooding of the stream as it reached higher banks. As the tunnel was laid open by water erosion, the suction caused by the gaping hole deviated the silt, boulders and bones that were carried from higher grounds into the cave. This fact is demonstrated by the bad state of preservation that most of the bones were in, suggesting considerable rolling along the stream bed. Yet, bones were found sometimes attached to others in their correct anatomical position, hinting that the skeleton was still in its carcass when it was brought inside and therefore remained intact. The light or dark colour of the bones indicates the degree of exposure to the elements: sun, air, water and also mineralisation.

Some huge boulders which had fallen down from the ceiling in the proximity of the cave entrance blocked the cave mouth half way up. The gradual deepening of the valley floor and the resultant lowering of water level of the stream gave chance to the bones and sediment to harden into a more solid mass. This process was further aided by the water-drippings from the calcareous ceiling that formed a crust of enveloping stalagmitic material on the floor.

THE END OF THE LAST ICE AGE

The coldest stage of the last major ice age occurred about 18,000 years ago; by about 8000 years later this ice age had more or less come to an end. Again, the reason for the retreating ice sheets is still quite obscure. The melting glaciers were allowing pasture-lands to re-emerge from beneath the vast snowscape. Rivers began to flow again and sea levels around the world and, in particular, that of the Mediterranean, rose to the heights which would eventually correspond to those of today's. This happened as temperatures became warmer and the ice cap retreated northward as well as back to higher altitudes.

The Maltese archipelago as well as many other Mediterranean islands became once more surrounded with sea water and again isolated from the mainland of Europe. Consequently, species of animals were being restricted by much closer boundaries when in search of food. It has not yet been fully ascertained whether the dwarf characteristics in elephants and hippopotami were due to local adaptation brought about by increasing arid conditions resulting in less vegetation and water as well as due to forced interbreeding.²¹ In Malta remains of the dwarfest elephant were many a time intermingled with those of the larger category in the same deep layers, suggesting different species living contemporaneously a long time ago. On the two Aegean islands of Tilos and Rhodes however, archaeologists have proven the existence of the dwarfest elephant from some 7,000 years ago and in layers younger than those where a larger type was found.²²

HUMAN INHABITANTS IN THE CAVE

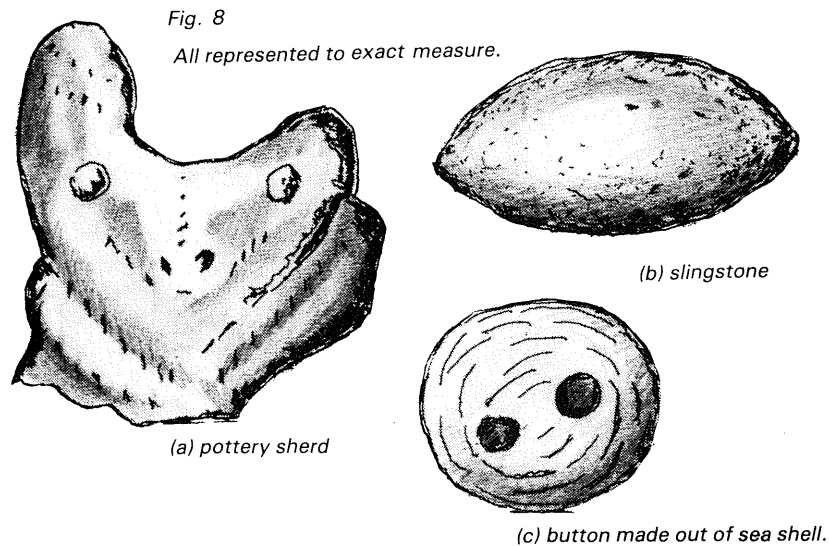
Whilst the lower stratified layers at Ghar Dalam displayed ancient animal remains, the upper ones were conspicuous for the pottery sherds and other artefacts. Truly the cave was one of the first sites used by **Neolithic man** in Malta, who about 5,000 B.C. crossed the open sea from Sicily to arrive here. This fact is proven by the numerous Stentinello type of sherds found in the cave.²³ These first settlers, as well as being able seamen owning a boat or raft large enough to transport their families and livestock, were also farmers who could work the land. This was established especially from another site, at Skorba, on the periphery of Mgarr.

21. An adult elephant's daily food consumption ranges between 135 to 155 kg.
22. Die Presse (Austrian newspaper) 11/12 June 1983
23. Stentinello lies to the North of Syracuse.

There, in the level corresponding to the Ghar Dalam phase (5,200-4,500 B.C.), grains of wheat, barley and lentils were identified.²⁴ There too were found traces of an oval shaped hut, 4.20 by 6 metres large, attesting also to this man's ability as a builder.²⁵

At Ghar Dalam proof of human habitation during the earliest phase of Maltese prehistory comes in the form of flint tools, slingstones, worked bones of birds, as well as obsidian - a kind of imported black volcanic glass. The pottery sherds found in the upper layers of the cave were numerous and reflected practically the whole of all the prehistoric period as well as historic sequences ranging from Punic to the end of the nineteenth century, the cave having been in use up to 1911.²⁶

During his research work at the Valletta Museum in the early fifties the archaeologist J.D. Evans noted from the pottery collection discovered at Ghar Dalam, 82 sherds of the impressed ware type dating to the earliest phase which he named after the site itself. Other pottery sherds he classified to later phases. Three sherds were attributed to the Grey Skorba phase by Dr. D. Trump. The 'Temple period' is well represented with pottery sherds from the Ggantija phase - 29 sherds, and Tarxien



24. D. Trump, Skorba, (pub. 1966) appendix IV.

25. Ibid. p.10.

26. D. Trump, Malta An Archaeological Guide, (pub. 1972) p.81.

phase - 59 sherds. A large quantity of pottery sherds represented the whole Bronze Age but especially Borg In-Nadur phase (1450-700B.C.)²⁷ Incidentally, this phase had been named by Evans after the ruinous site of a fortified village situated a few hundred metres away at the Southeast end of the ridge which faces the cave.

In 1934, two jaw bones, one of which belonged to a 4 month old, and the other to a 2½ year old child were discovered some 55 metres inside the cave by Dr. J. Baldacchino, then curator of the Natural History Section. These were attributed to the Bronze Age by Sir Arthur Keith, himself an eminent anatomist²⁸ and a participating archaeologist of the cave.

EXCAVATIONS

After the first documented visit by Issel in 1865, the cave was never excavated properly until 1892, when an English teacher J. Cooke sank eight trenches each at a distance from the other, and also produced the first sketch of the cave's features (see fig. 2). Strange to say, although he came across lots of hippopotami remains, only once did he find bones of elephant and these in the first trench he dug out at 177 metres inside the cave. His last trench was just 10 metres inside and near to the entrance and was dug within an enclosed space which was then being used as a cattle pen. After the excavations, he had the trenches refilled with the same material that he had dug out.²⁹

Twenty years elapsed before the next systematic excavations were started by N. Tagliaferro and C. Rizzo. This series of digs was further re-enforced in 1914 by Thomas Ashby, Guzeppi Despott and Themistocles Zammit. The latter was that same year to conduct his own excavations at Tarxien in the ruins of the Megalithic Temples. Meanwhile the cave had become the haunt for unauthorised archaeological enthusiasts who, during later excavations, were found to have disturbed at places some of the stratified layers.

In 1917, Despott was granted 10 pounds by the British Association for Scientific Studies to enable him to continue on his previous excavations. It was then that he came across two human molars whose roots bore signs of taurodontic malformation, i.e. their roots being fused together instead

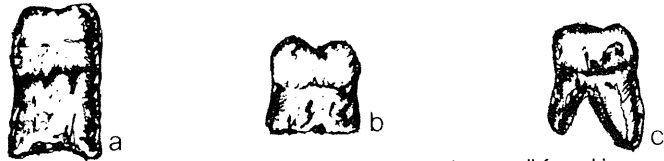
27. J.D. Evans, The Prehistoric Antiquities Of The Maltese Islands (pub. 1971) p.20.

28. A. Keith, M.A.R. 1935-36, p.333.

29. J. Cooke Har Dalam (1892)

of separated ³⁰. This taurodontic characteristic in the teeth was quite commonly found in Neanderthal Man who had inhabited Europe much earlier in time (125,000 - 32,000) than any previously known inhabitant of Malta. The possibility that such an ancestor had once lived here was eventually discarded as similar malformations were noted later on to occur, although rarely in modern man. During the years that followed this discovery, other archaeologists offered their own helping hand in digging and studying the cave, namely: E. Flamings (1921), G. Sinclair, C.G. Thompson (1922-1924) and Sir Arthur Keith, who had previously written his own paper upholding his conviction on the presence of Neanderthal Man in Malta. ³¹

Fig. 9



(a) & (b): Taurodontic molars compared to (c), a normal type, all found in cave's upper layers.

The cave was opened to the public in March of 1933 by the newly appointed curator of Natural History, Dr. J. Baldacchino. The adjacent museum through which one enters to reach the cave was set up for display in 1934. This man carried out the last major excavations of the cave which lasted until 1937. He managed to discover another taurodontic molar as well as the other small cave facing Ghar Dalam which proved the existence of a tunnel crossing the valley.

During all these numerous excavations held both in this cave as well as at other sites in Malta, the Pleistocene fossil remains that were found included those of Brown Bear (*Ursus arctos*), Hippopotamus (*Hippopotamus pentlandi*, *H. minutus*), three types of dwarf elephants (*Elephas mnaidrensis*, *E. melitensis*, *E. falconeri*), giant dormouse (*Myoxus melitensis*), vole (*Arvicola pratensis*), Giant Swan (*Cygnus falconeri*), Red deer (*Cervus elaphus*, *Cervus barbarus*), Giant Turtle (*Testudo robustissima*, *Testudo graeca*), Wolf (*Canis lupus*), Fox (*Canis vulpes*), Toad (*Bufo viridis*).

All of these species have since thousands of years ago become extinct, leaving the Maltese islands with a much more presently diminished wildlife.

30. See Excavations Conducted at Ghar Dalam 1917, by G. Despott.

31. A. Keith, Neanderthal Man in Malta.

32. See M.A.R. 1933-38

CONTENTS AT GHAR DALAM

From excavations held in 1936 by Dr. J. Baldacchino at 6 metres inside the cave entrance. The area covered was approximately 8 x 8 metres square.

LAYER	THICKNESS	LITHOLOGY	CONTENTS OF LAYERS
1st layer	0.60 m	Greyish red earth	Pottery ranging from Punic to recent - numerous shells of mollusca - bones of domesticated animals.
2nd layer	0.60 m - 0.75 m	Clayey red earth	Pottery sherds from various prehistoric phases - slingstones - flint - obsidian - polished bone of bird - button & bead made from sea shell - many marine & land shells - Taurodontic molar - bones of domesticated animals - bones of toad.
3rd layer	1.65 m -	Red earth	Top surface hardened with stalagmatic droppings 1cm thick - fragments of stalactites lying about - bones of ox, elephant tusks & molars & bones from middle 1/2 layer - enormous quantities of teeth, bones and antler of deer in lower 1/2 of level - bones of deer in fine state of preservation - few bones of hippopotamus.
4th layer	0.45 m	Clayey red earth	Large pebbles - water worn boulders - quantity of bones & teeth of hippopotamus and elephants.
5th layer	1.20 m	Stalagmatic clayey floor	Enormous accumulation of bones & teeth of esp. hippotami & elephants, constituting 75% of floor - most bones with signs of rolling - a few were in good state of preservation.
6th layer	1.50 m	Finely laminated yellow-blue clay	No organic remains were found.