

“Preliminary Note on the Discovery of a Pigmy Elephant in the Pleistocene of Cyprus.” By DOROTHY M. A. BATE. Communicated by HENRY WOODWARD, LL.D., F.R.S., F.G.S., V.P.Z.S., late Keeper of Geology, British Museum, Natural History. Received April 23,—Read May 7, 1903.

While still in Cyprus the receipt of a grant from the Royal Society in April, 1902, enabled me to devote a considerable amount of time not only to making more extensive excavations in some of the caves previously found, but also to a search for further cave deposits. I confined my attention chiefly to the Keryina range of limestone hills in the north of the island in the hope of finding bone caves containing other remains than those of the pigmy *Hippopotamus*, of which Dr. Forsyth Major has already given a short description\* from specimens discovered by myself.

In this search I was at length successful, although it was not until a certain amount of tentative digging had been carried on in four out of five newly discovered deposits that work was started on what appeared at first to be the most unpromising looking place which had been found, and was consequently the last to receive attention.

However, during the first day one of the workmen found, not far from the surface, part of a tooth which was at once recognised as being that of an elephant. After this discovery every effort was made to procure a complete collection of the remains of this species, but at no time were either teeth or bones found to be so plentiful as those of *Hippopotamus minutus*, with which they were associated.

Often not a single proboscidean tooth would be obtained during two or three days' work, and only eleven molars and parts of molars were procured as the result of three weeks' digging. It was then decided to continue excavations here for a short while longer, and this was done until the end of July, work being again resumed in the beginning of the following October.

Altogether a good series was obtained of the teeth of this elephant, which is found to be a pigmy species. With the exception of the first milk molar (m.m. 2), specimens were procured of all the milk and permanent molars of both the upper and lower jaws; also a number of tusks of different sizes, though these included none of the tiny milk incisors. No teeth which could be referred to very aged individuals were obtained, for amongst the last true molars none have more than half their full number of plates in use.

The series of teeth consisting of specimens of very small size, it was natural in the first instance to compare them with the remains of the

\* ‘Proc. Zool. Soc.,’ June 3rd, 1902.

dwarf species from the Pleistocene deposits of the caves and fissures of Malta and Sicily. It was thought probable that they would differ from these; the fact of the pigmy hippopotamus of Cyprus being distinct from those found in the other large Mediterranean islands, lending colour to the supposition; this expectation was fulfilled, for the Cyprus fossils do not appear to be identical with any of the Maltese species, though they seem to come nearest to *Elephas melitensis* both in size and in the number of plates in the molars. The number of these plates in any particular tooth is liable to vary to a certain extent, but on taking the average, as far as this can be judged from the amount of material available, the resulting ridge formula, exclusive of talons, is  $\div \frac{5}{5} \frac{7-8}{7-8} \frac{8}{8} \frac{9}{9} \frac{12}{12}$  which practically agrees with that of *E. melitensis* given by Dr. Falconer.\*

The teeth of the Cypriote elephant are considerably smaller than those of *E. mnaidriensis*, from both Sicily and Malta, this being the largest species from the last-named island. They also differ somewhat in their ridge formula, which is that mentioned above, while Dr. Leith Adams† gives that of *E. mnaidriensis* as  $\frac{3}{3} \frac{6}{6} \frac{8-9}{8-9} \frac{8-9}{8-9} \frac{10}{10}$   
 $\frac{12-13}{12-13}$ .

The Cyprus form seems to have been also slightly inferior in size to *E. melitensis*, for its largest upper and lower molars do not equal, either in length or breadth, some of the specimens of the corresponding teeth of this Maltese species which are in the collection of the British Museum. Its tusks differ from all those from Malta in being compressed laterally, which character is especially noticeable in those of the female and young; further, they appear to be more strongly curved than those of *E. melitensis*.

As a general feature it may be said that the molars from Cyprus are, on the whole, more simply constructed than those of *E. melitensis*. They show a still slighter tendency to "crimping" in the bands of enamel, and are less inclined to develop the mesial expansion of the plates of dentine which is not uncommonly found in the teeth of *E. melitensis*, and is so conspicuous in those of *E. africanus*.

It is well known that when the plates of an elephant's tooth first come into use, the edging of enamel is in the form of a series of rings owing to the digitation of the plates. These are later worn into a single band surrounding the enclosed area of dentine.

In the Maltese specimens it is not uncommon to find the encircling enamel persisting thus divided for a considerable time. Even four or five ridges may remain in this condition at one time in a single

\* 'Pal. Mem.,' vol. 2, p. 298. London, 1868.

† 'Zool. Soc. Trans.,' vol. 9, 1874, p. 112.

tooth, with perhaps an anteriorly decreasing number of rings. This is well shown in a tooth, now in the British Museum collection, doubtfully ascribed by Mr. Busk\* to the first upper true molar of *E. Falconeri*. This is not so much the case in the Cyprus specimens, in which the bands of enamel only remain thus separated into several annuli for a very short while after the plate comes into wear.

The molars vary considerably, some specimens having very broad crowns while others are somewhat narrow. The bands of cement are wide, in perhaps the majority of cases almost, or quite, equalling in width the plates of dentine; this seems to be the exception and not the rule in the molars of *E. melitensis*.

Taking into consideration the several characters in which the teeth of the Cyprus elephant differ from those of all the hitherto described dwarf species (putting on one side *E. lamarmoræ*† from the Pleistocene of Sardinia, the teeth of which are unknown to science) as well as the distinct habitat of the animal, I have come to the conclusion that it is specifically distinct from these other small forms, though possibly they were derived from a common ancestor, and I, therefore, propose to name it *Elephas cypriotes*.

The discovery of the remains of this pigmy elephant, as well as of *Hippopotamus minutus*, in Cyprus, is interesting in comparison with the dwarf species from Malta and Sicily, and because the presence of an extinct mammalian fauna in this locality had not previously been recorded. The occurrence of these different, though apparently closely related, races of small elephants in widely separated islands of the Mediterranean, lends probability to the theory that this is a case of independent development along similar lines, the result of similar circumstances and environments. Nevertheless, it would perhaps be wise not to take it for granted, without further evidence, that this diminutive size is wholly and entirely due to specialisation.

I hope shortly to be able to communicate a more detailed account, with figures and full descriptions, of this collection of elephant remains from Cyprus.

\* 'Zool. Soc. Trans.,' vol. 6, Pl. 53, fig. 9, p. 295.

† Dr. Forsyth Major, "Die Tyrrhenis," 'Kosmos,' vol. 7, 1883, p. 7.