

MONKEYS IN EUROPE, PAST AND PRESENT.

By F. E. ZEUNER

MACAQUES CONTEMPORARY WITH PREHISTORIC MAN

It will come as a surprise to some readers that monkeys were contemporaries of prehistoric man in Europe north of the Alps. Finds are few, yet sufficient to make this statement and also to say that they belonged to the genus *Macaca*, of which the modern "Gibraltar Ape" is a member.

Altogether about fifteen finds of fossil macaques have been made. In time they range from the Lower Pliocene (about 10,000,000 years ago) to the Last Interglacial (about 150,000 years ago). The macaques evolved mainly in the east, where India harbours to-day as many as eight species, but they re-occur in the extreme west of the Old World, in Tunisia, Algeria, Morocco, and Gibraltar, with *Macaca inuus* Linn., the "Gibraltar Ape".

To-day their foothold in Europe is extremely precarious, but palæontologically they are good Europeans. The earliest known macaque comes from the lower Pliocene of Montpellier, in France. Towards the end of the Pliocene, in the Villafranchian, macaques occurred in Sardinia, Italy, Hungary, and a little later in Holland.

In the Pleistocene, the period of the Ice Age, macaques were present in the mild interglacial phases, and in the milder areas of the temperate zone. Remains have been found in Algeria, in Haute Garonne (south-west France), Württemberg (south Germany,) at Cromer in Norfolk, and Grays on the Thames.

Thus, the distribution of fossil macaques was remarkably wide in Europe, from the Norfolk coast and the Danube to the Mediterranean and, of course, across to North Africa. These monkeys lived in northern Europe in the Great Interglacial; they were roaming about in the flood-plain forests of the River Thames at about the same time when Swanscombe Man was manufacturing Acheulian hand-axes. There is no doubt that the climate of the Great Interglacial was no more than temperate, though probably slightly milder in winter than to-day. The question arises how monkeys, forms of life which one is used to associating with the tropics, were able to cope with such a climate.

It is necessary first to dissipate the misconception that monkeys cannot withstand low temperatures. In zoological gardens and elsewhere in captivity many die, indeed, in the cold

season, though in all probability from infections rather than low temperatures. Low temperatures may, of course, be dangerous when combined with wetness of the cage and lack of movement, but in the free state, macaques are quite capable of surviving cold spells. The Japanese macaque, for instance, occurs at 41° north and is perfectly hardy, and in north China and Tibet macaques have to weather a continental winter. In Algeria they have been observed at a temperature of - 12° C., in Kashmir they ascend to 2,000 metres, and in Simla they have been seen in the snow.

The most impressive proof of hardiness, however, is the experiment of a Hessian Minister of State, Count Schlieffen, who in 1763-1783 bred a herd of sixty Gibraltar Apes from one parent pair. These animals were thriving in the woods of his estate near Kassel, in Germany, until they contracted rabies from a dog.

It is not low temperature which restricts the distribution of macaques but the problem of food. The reduction of their numbers in North Africa is possibly connected with the widespread desiccation resulting from agricultural practices and change of climate, and the same may well account for their absence to-day from Egypt, Syria, Mesopotamia, and Persia. Desiccation inevitably means lack of food. In Palestine they must have disappeared in pre-Hebrew days, for there is only one reference to monkeys in the Bible, when King Solomon received some as presents. The word used for these is, according to Tristram, of Tamil origin and therefore points to an Indian origin of these specimens.

The natural food of macaques consists of fruits, nuts, insects, and other small animals. The Gibraltar Ape has actually been observed feeding on sloe, mountain ash, blackberries, strawberries, capers, and the corms of the dwarf palm (*Chamærops humilis*), as well as acorns. To these may be added, as generally available, wild apples, pears, and cherries, many berries, hazel nut, walnut, beech, and sweet chestnut, and several species of edible roots and leaves. Of this list only the capers and dwarf palms have to be ruled out for Central Europe in interglacial times. All others, including the walnut, were indigenous as far east as Thuringia, though sweet chestnut may not have extended beyond the confines of France. It is worth remembering also that a tree like the edible fig (*Ficus carica*) has been found at La Celle-sous-Moret, on the Seine, in northern France in a deposit which yielded Acheulian implements. Since these are of a relatively primitive type, the deposit is likely to belong

to the Great Interglacial, the mean temperature of which was but 2° C. higher than at present, and during which macaques lived beside the Thames.

Vegetable food then was available in plenty for our Pleistocene monkeys. In addition, the warmer seasons provided plenty of animal food in the form of insects like caterpillars, locusts and grasshoppers, and beetles. In warmer countries macaques are known to be fond of scorpions, so spiders may be part of their diet. Worms are not despised either, nor small mammals and birds if they can be obtained.

In short, the omnivorous macaque is not likely to suffer from hunger, so long as the winter does not destroy its food supply. This is probably the factor which determines the northern limits of the genus to-day. Snow as such is no hindrance, though the absence of berries and nuts, and the impossibility of grubbing on the ground when the snow cover is heavy, are undoubtedly limiting conditions. Macaques are very efficient food collectors, equally at home in the trees as on the ground, where their rate of picking up food increases in an astonishing manner as the size of the tit-bits decreases. They look under stones and old leaves and are, therefore, able to cater for themselves in a winter of the English type. Their former restriction to west, central, and southern Europe is almost certainly due to the great length of the east European snow winter.

One might ask, therefore, why monkeys did not return to temperate Europe after the Last Glaciation. According to geological evidence, they returned in each of the three interglacials, so that there is no reason why they should not have come back there after the end of the Last Glaciation. In view of the fact that macaques have lived in Europe during the Pleistocene in climatic conditions less favourable than those of southern Spain, and since the species occurs wild from Tunisia to Morocco, there is no reason to regard its natural occurrence on the Spanish peninsula as at all improbable. It may well be that early deforestation caused by man, implying deficiency of food supply, and intense cultivation and the enmity of prehistoric and later farmers drove the macaques to rocky refuges of which Gibraltar is the only one on which they managed to survive. From there they used to extend their field of activities into Spain in comparatively modern times.

The alternative theory is, of course, that the Romans or the Moors brought them over. If so, one asks oneself, what was the purpose. Their former natural occurrence on the Iberian peninsula would, however, even then remain a possibility.

HISTORY OF THE GIBRALTAR PACKS

It is certain that apes were present on the Rock when Gibraltar was captured by the British in 1704. The ape colony then lived on those parts of the Rock which are not occupied by the town or military installations. For about 200 years sufficient natural food must have been available; at any rate there are no records of feeding the apes until 1913. A steep and almost inaccessible shelf on the east side is called Monkeys' Alameda. No apes are to be found there nowadays. The vegetation consists mainly of the dwarf palm, *Chamærops humilis*, which is one of the food plants of the macaques.

The gradual extension of the areas occupied by man led to difficulties in two respects. The foraging areas were reduced and the apes, being food collectors, require large spaces with vegetation comprising roots, nuts, and berries. The vegetation on the upper Rock, where they were compelled to live, was less dense than it is to-day, and consequently their numbers were reduced by starvation. Moreover, circumstances forced them to invade gardens and even the town. In the gardens they were naturally regarded as a pest, and many were shot. In the town and the military barracks, which were continually raided, they succeeded in obtaining some food, but there, too, they were regarded as a nuisance, and it is doubtful whether the food they were given or managed to steal was always suitable. Even ships were not free from visits. About 1910 it is believed that there were still about 200 apes on the rock, but they broke up into family packs among which fighting for territories took place, and further casualties resulted.

The Royal Garrison Artillery units had always shown a great interest in the apes, and in 1913 the first step was taken to provide them with food.¹ A Master Gunner was given this task, and money was found by the Colonial Office branch to provide the food. About 1915 an officer was appointed "in charge of the Apes", to supervise the well-being, feeding, and increase or decrease in the numbers of the apes, in addition to his normal duties.

The policy of feeding the apes had the advantage that they became accustomed to definite feeding places. It was thus possible to restrict them more or less to certain areas without depriving them of their liberty. In 1918 the Governor issued an

¹ Other reports say that in 1918 only three females were left. In the light of Major Skelton's findings this does not appear probable. Moreover, the amusing story of the ape that attacked a little girl in 1912, related by Sir Claude Russell, in *Oryx*, I, p. 23, suggests that apes were not yet rare in that period.

ordinance which made it an offence to encourage the apes to come down from the Upper Rock (above the Unclimbable Fence) or to feed them anywhere except at Queen's Gate and the Aerial Standard. The result of this regulation has been that the apes no longer invade the town and the gardens.

It seems, however, that the regulation worked very much to the detriment of the apes, possibly because their organization in packs now led to increased competition between them. Two feeding places would normally support two packs only. For this reason, or perhaps others also,¹ the population dwindled away rapidly, until in 1924 only four apes could be found on the Rock.

In 1927, however, twenty-seven apes were counted, and orders were given by the Governor to reduce their number to ten. An attempt was made to do so. It proved unsuccessful since, it is reported, the apes could be neither trapped nor shot. One male, Jacko, was captured in 1928 and sent to the London Zoo, where he lived until 1941. Yet, strangely enough, by 1931 only ten apes were left, and no breeding took place in that year, nor in 1932. It was evident that the ape colony was on the point of extinction. The then Governor, General Sir Alexander Godley, therefore sought the advice of the President of the Zoological Society, which was gladly given. Two young apes were obtained from North Africa in 1931, and five were imported from Tangier in 1932. These seven importations should have raised the number to seventeen, nevertheless, in 1939 the strength of the colony was only eleven. Of these, only about half the number may have been of the old Gibraltar stock.

In 1941 it was decided to build a cage at Queen's Gate in order to protect the young apes, whilst the old males and females were allowed to roam about as before. This proved a failure, and all the apes were again allowed to run wild.

In 1943 only seven apes were left, one of which appears to have been Mary, a female received as a baby from North Africa in 1942. But later in this and the following year seven specimens (one male, six females) were imported from North Africa, it is said at the instigation of Mr. Winston Churchill. In 1945 Mrs. Kirby Green, of Gibraltar, presented to the pack another female originally imported in 1943. By 1948 the strength of the colony had begun to increase owing to successful breeding, the number being twenty-four.

The last three years have seen a healthy development of the Gibraltar apes. On 1st January, 1951, thirty-two apes were

¹ In 1923 an unsuccessful attempt was made to secure permission to transfer all remaining apes to North Africa. Fortunately it was not granted.

present, divided into two packs, that of Queen's Gate and that of Middle Hill. Two one-year-old males, one from each pack, were shipped to Glasgow Zoo towards the end of January. When I saw the packs in March, there were thirty specimens, and an increase of about nine was expected in the course of 1951.

In 1950 there were four deaths (three males, one female), and nine births. It is significant that Mick, the leader of the Queen's Gate pack, was the father of seven of these, and Gunner, leader of the Middle Hill pack, the father of the remaining two. Since Gunner is a full-blooded North African, and Mick at least 50 per cent North African, the Gibraltarian strain is rapidly being drowned in the new and apparently more vigorous North African strain. Considering that the importations of the early 'thirties had previously brought an admixture of about 50 per cent North African stock, it is not likely that any surviving individual is more than one-quarter Gibraltarian, and most of them much less. But since there do not appear to be any constant differences between the Moroccan and Gibraltar races, this infusion of foreign blood is not a serious matter.

At present Major W. E. Skelton, R.A., is in charge of the apes. I am greatly indebted to him for most of the factual matter relating to this "history" of the Gibraltar packs. Gunner Portlock personally attends to the wants of the apes and knows them all by their names. All who are interested in the survival of the Gibraltar macaques owe a debt of gratitude to Major Skelton and Gunner Portlock for the persistent care and kindness with which they have been looking after the animals. The amount of money spent on food is still regrettably small. In 1950 it was 4*d.* per day on each ape.

CONDITION AND HABITS OF THE PACKS

When I saw the two packs in March, 1951, the lower or Queen's Gate pack consisted of nineteen individuals. Its leader was Mick, a male then four years old. Among the females, Bess is the oldest ape on the Rock. She was born in July, 1938, and in spite of her thirteen years, gave birth in 1950 to a healthy male baby, though only after having had a number of stillbirths, including on one occasion twins.

The upper, or Middle Hill pack, consisted of eleven members. Its leader was "Gunner", a magnificent male about 8 or 9 years old. This pack comprised a larger number of young animals than that of Queen's Gate. On the whole, they appear to be in a better condition than the Queen's Gate pack. This impression

may be due to the fact that they live at a higher altitude and for this reason have a thicker winter fur.

Both packs are entirely free to roam about. They do so, foraging for themselves, except at the usual feeding hours at 9 a.m. and 4 p.m., when they gather at the accustomed places. The food they are given amounts to two or three pounds weight a day and consists of Jerusalem artichokes, spring onions, groundnuts, hazel nuts and walnuts, radishes, carrots (not popular), bananas (occasionally), other fruit, cabbage and lettuce, biscuits, oats, and oatmeal. Curiously enough they are as fussy with their food as monkeys often are in zoos. Some kinds of food are not eaten one day but readily taken on another. There is much waste, but this is picked up later on. The food which is now given to the apes is of the natural type, it merely supplements what they can pick up among the vegetation. Feeding with cookhouse refuse, which may have been one of the reasons for the decline in the population in spite of importations, has been discontinued, and the apes' present healthy condition is perhaps to be ascribed to this fact. Even so, a fatal case of enteritis occurred in 1950.

The two packs have established themselves as natural units. An attempt was made to transfer a female from Queen's Gate to Middle Hill, and another from Middle Hill to Queen's Gate. But although the pack leaders tried to restrain them, both returned to their original packs.

On the whole, the apes are friendly and will settle on the observer's shoulder or investigate his pockets. With the regular feeding now practised, they have virtually ceased to raid inhabited areas. Should one of them enter a garden, the Officer in charge of Apes, together with his staff, proceeds to the locality and drives the ape back to its own domain.

The apes now breed regularly once a year, the young being born between June and August. In 1950 only one adult female was unproductive. The gestation period is six months, and normally only one young is born.

GENERAL OBSERVATIONS

The condition of the Rock apes can be regarded as satisfactory, so far as health and breeding go. This is in large measure due to the efforts of Gunner Portlock, who has looked after them for over twenty years. From the ecological point of view it would be desirable to let their number increase further. If supervision and feeding continue there is no risk of their taking to raiding

the town again, especially if they were concentrated on the Upper Rock. It might be possible to establish a third pack there by starting a new feeding place.

From time to time Gibraltar apes have been sent to British and foreign zoos. There is hardly any objection to this so long as only males are exported and the numbers remain small. But for some considerable time it should be made a strict rule that females are left on the Rock, in order to safeguard the continued existence of the packs.

The following list of the present monkey population was very kindly supplied by Major W. E. Skelton, Officer i/c Apes. Their number is thirty-four, and they have been re-arranged in order of age. Since January, 1951, the following changes have taken place. In January, 1951, Kaiser and Mark were sent to Glasgow Zoo. In April, 1951, Jim disappeared after having been injured by a live electric cable following the *Bedenham* explosion. In May, 1951, Dan was sent to Ilfracombe Zoo. Mick, born on the Rock on 17th June, 1947, of Jack and Mary, and father of ten of the present population, and Mary, a North African female received in 1942, were sent to Colombo Zoo on 29th January, 1952.

MONKEY POPULATION OF GIBRALTAR ON 29TH FEBRUARY, 1952,
ACCORDING TO MAJOR W. E. SKELTON

Name.	Sex.	Age.	Date of Birth.	Father.	Mother.	Pack.	Remarks.
Bess .	F	13	-7.38	?	?	Q.G.	
Daisy .	F	10	1941	?	?	Q.G.	From N. Africa, 1944.
Beatrice .	F	9	1942	?	?	Q.G.	Arr. Gibraltar from Tangier 1.12.43.
Gunner .	M	9	1942	?	?	M.H.	Arr. Gibraltar from N. Africa 14.6.44.
Joan .	F	8	1943	?	?	Q.G.	Received from N. Africa. Date not known.
Kathleen .	F	8	1943	?	?	M.H.	Arr. Gibraltar from Fez 29.9.43.
Maureen .	F	8	1943	?	?	Q.G.	From N. Africa, 1943.
Winnie .	F	8	1943	?	?	M.H.	From N. Africa, 1943, and presented to the Pack by Mrs. Kirby Green, of Gibraltar, 7.9.45.
Madeleine .	F	7	1944	?	?	M.H.	From N. Africa, 1944

<i>Name.</i>	<i>Sex.</i>	<i>Age.</i>	<i>Date of Birth.</i>	<i>Father.</i>	<i>Mother.</i>	<i>Pack.</i>	<i>Remarks.</i>
Belinda	F	5	21.7.46	Jack	Beatrice	Q.G.	
Max	M	4	22.6.47	Jack	Mary	Q.G.	
Nicky	M	3	26.5.48	Gunner	Kathleen	M.H.	
Dick	M	3	27.5.48	Gunner	Monica	M.H.	
Penny	F	3	9.7.51	Gunner	Winnie	M.H.	
Becky	F	2	3.6.49	Jack	Beatrice	Q.G.	
David	M	2	9.6.49	Jack	Daisy	Q.G.	
Madison	M	2	3.7.49	Gunner	Madeleine	M.H.	
Wendy	F	2	11.7.49	Gunner	Winnie	M.H.	
Monty II	M	2	16.7.49	Gunner	Monica	M.H.	
Kim	M	1	22.5.50	Gunner	Kathleen	M.H.	
Brutus	M	1	21.6.50	Mick	Beatrice	Q.G.	
Rocky	M	1	21.6.50	Mick	Bess	Q.G.	
Winston	M	1	27.6.50	Gunner	Winnie	M.H.	
Mona	F	1	9.7.50	Mick	Maureen	Q.G.	
Donald	M	1	16.7.50	Mick	Daisy	Q.G.	
Bill	M	1	1.8.50	Mick	Belinda	Q.G.	
Malcolm	M		13.5.51	Gunner	Madeleine	M.H.	
Celia	F		17.6.51	Mick	Beatrice	Q.G.	
May	F		21.6.51	Mick	Mary	Q.G.	
Minnie	F		3.7.51	Mick	Maureen	Q.G.	
Julian	M		19.7.51	Mick	Daisy	Q.G.	
Ken	M		23.7.51	Gunner	Kathleen	M.H.	
Wallace	M		23.7.51	Gunner	Winnie	M.H.	
June	F		25.7.51	Mick	Joan	Q.G.	

Note: Q.G. = Queens Gate Pack.
M.H. = Middle Hill Pack.