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Abstract: In a revised edition of Sterndale's book, published in 1929, Frank Finn pointed out that the cheetahs used for hunting by Indian princes were now all imported from Africa. He quoted Colonel J.C. Founthorpe as stating: "There is no doubt that the cheetah is now very rare… A few survive in the Berar districts of the Central Province…" The book chapter describes historical information on cheetahs and their significance in Europe in historic times. Besides taxonomy and morphology, information on status and distribution in different regions, observations on hunting behavior, and reproduction and mortality are given.

Cheetah, Hunting Leopard

Acinonyx jubatus
(SCHREBER 1776)

The cheetah, as St. George Mivart pointed out, differs much more from all other cats than any two other cats differ from one another. It is the most stream-lined and long-legged of felines, built entirely for speed. Not for the cheetah the stealthy, patient stalk, the close approach, the sudden spring—in swift pursuit, it catches up with its prey and bowls it over while running flat out.

The cheetah's ancestors must have diverged from the main stem of feline evolution a long time back, most probably at some point during the Pliocene, for the giant cheetah of the early Pleistocene of southern Europe, India, and China was modelled on the same lines as the present-day species. Late Villafranchian specimens show a distinct reduction in size, while late Pleistocene cheetahs from China are almost undistinguishable from modern animals.

The fact that cheetahs could easily be tamed and trained for hunting was realized at a very early date. On a Mesopotamian seal from the third millennium B.C. can be seen an animal led on a leash which is thought to be a cheetah, possibly with a hood over its head. Egyptian tombs and rock-temples contain excellent representations of tame cheetahs, and although they seem to have been in use since the Third Dynasty, the great number of Eighteenth and Nineteenth Dynasty paintings show them at that time almost to have rivalled dogs in their popularity as hunting companions. The Assyrians utilized cheetahs, and so did the Minoans, who probably imported them from Egypt.

In Syria and Palestine the Crusaders saw gazelles hunted with the aid of cheetahs, which they usually referred to as "leopards," and a fifteenth-century king of Armenia is reported to have had a "pack" of a hundred of these animals.

Hunting with cheetahs is usually associated with Eastern countries, but at times this exotic sport enjoyed great popularity among European nobility. There was practically no Italian Renaissance court without hunting leopards, and in 1479, the Duke of Ferrara presented one of his "guepards" to King Louis XI of France, who thanked him most warmly for the much appreciated gift. As shown on numerous paintings, woodcuts, and tapestries, the animals were carried out into the hunting field on horse-back, perched on a pillow

behind the handler. They were then released to run down hares and roe-deer.

After conquering the Duchy of Milan, Louis XII took home Lodovico Sforza's "pack" of cheetahs and ran them in the park of the Chateau d'Amboise. Francis I, who can be said to have introduced the glitter of Renaissance Italy into France, delighted in hunting with cheetahs, and so did his son and successor, Henry II.

An Englishman, Fynes Moryson, who visited Prague at the end of the sixteenth century, saw two tame cheetahs of which he wrote: "They were of a yellow colour, spotted with blacke, the head partly like a cat, the body like a greyhound, and when the huntman went abroad, they leapt up behind him, sitting upon the horse like a dog on the hinter parts, being so swift in running, as they could easily kill a hart."

Leopold I, Emperor of Austria, tried to revive the hunting of hares with cheetahs around 1700, but the sport was considered as too sanguinary and found no acclaim. Akbar the Great kept countless cheetahs for coursing gazelles, antelopes, and deer, and Abu Fazil, his chronicler, gives an amusing account of one particular hunt:

> It chanced that they loosed a special cheetah called "Chitr Najan" at a deer. Suddenly there appeared in front of them a ravine which was twenty-five yards broad. The deer leapt into the air to the height of a spear and a half and conveyed itself across. The cheetah in its eagerness took the same course, cleared the ravine and seized the deer. On beholding this astonishing occurrence the spectators raised a cry of amazement, and there was great rejoicing and astonishment. The Emperor raised the rank of that cheetah and made him chief of the cheetahs. He also ordered that as a special honour and as a pleasure to men, a drum should be beaten in front of the cheetah.

It was realized long ago that cheetahs captured adult were more easily trained than those taken as cubs, and Akbar had his animals caught in pitfalls with trapdoors. He trained many of them himself, in a much shorter time, according to Abu Fazil, than was usually required. In India, cheetahs remained a status symbol of nobility until quite recent times, and there was a certain class of men who devoted themselves entirely to the trapping and training of these animals.

Considering how long it has been known to Europeans, it seems strange that Linnaeus did not list the cheetah in the tenth edition of his *Systema Naturae*, published in 1758 and regarded as the basis of scientific nomenclature. It was Schreber who named it *Felis jubatus* in 1776. Naturalists soon discovered the cheetah to deviate in many

ways from other cats, and Joshua Brookes, who had an anatomical and zoological museum in London, changed the generic name to *Acinonyx* in 1828.

The pupils are round, and the hyoid is fully ossified as in the so-called "small" cats. The skull is light and thin-boned, high and broad, shortened in its facial part, wide behind the postorbital process and so very convex in the frontal area that it appears domed, raised much higher above the muzzle than in any other cat. The canines are less well developed than those of the leopard. The postcanine spaces, so characteristic of other felids, are lacking, with the anterior upper premolars crowded in between the canines and the second premolars. The upper carnassial is large and very sharp-edged, having the inner cusp greatly reduced in size.

Characteristics. Leopard and cheetah are of about the same length, but the latter stands considerably higher on long, sinewy legs. The body, although deep-chested, is slimmer than the leopard's; the head is smaller and more roundish. The tail is of more than half the length of head and body. The ears are short, broad, and rounded. According to W. Emcke, who studied the young cheetahs born in Krefeld (Germany) Zoo, cubs are able, during the first fifteen weeks, to retract their claws like any other cat. The claws then become partly retractile but the main peculiarity of the cheetah's digits is the absence of the cutaneous lobes which, in other cats, act as claw sheaths. The claws thus remain bared all the time and also show in the animal's spoor. They are blunt and only slightly curved, except for that of the thumb, which is large, sharp, and well curved. With the interdigital webs greatly reduced, the toes can be spread widely. The pads are hard.

The coat is coarse, its colour varying from yellowish grey and tawny to isabelline and bright rufous fawn, paling somewhat on the belly and on the insides of the limbs. Upper lip, chin, and throat are buffy white. The markings consist of round black spots which are not arranged in rosettes. A black line runs from the anterior corner of the eye to the upper lip, a less well defined line or a row of spots from the hinder corner of the eye to below the ears. The backs of the ears are black, tawny at the base and on the margins. The tail is spotted above, with the markings merging into more or less imperfect rings on the posterior part. The tip is white.

Young cubs have the head, neck, and back covered by a long woolly mane of light bluish grey colour. Underneath this mantle, the coat is smoky grey or blackish, indistinctly spotted black. The cloak is reduced within ten weeks, and there remains only a slight mane of

wiry hairs on the back of the neck, which, in fully adult specimens, becomes practically invisible. At the age of about three months the colour of the coat turns to tawny with well-defined spots.

Taxonomists have described a number of subspecies, of which eight—two in Asia and six in Africa—are considered valid. There was considerable excitement in zoological circles during the 1920s, when some orange-coloured cheetahs with large spots that tended to merge into longitudinal lines were shot in Rhodesia. Pocock regarded them as representatives of a different species, which he named *Acinonyx rex*, the king cheetah. They are now thought to be mere mutations, analogous to the cases of nigrism and abundism observed in leopards. There have been rumours of "king cheetahs" being seen in the northern parts of the Kruger National Park, and the authorities of the Transvaal Museum managed to locate the skin of one that had been shot near Messina in 1940.

In a letter to the editor of *Nature in East Africa*, H. F. Stoneham reported coming across a black cheetah in the Trans-Nzoia District of Kenya in 1925. Vesey Fitzgerald saw a melanistic individual in what is now Zambia, in the company of a normally coloured animal. Albinism seems to be exceedingly rare, but Jahangir, the "naturalist on the Mogul throne," mentioned a white cheetah that was brought to him at Agra, the first and only one he ever saw. "Its spots which are usually black, were of blue colour," he wrote, "and the whiteness of the body was also inclined to bluishness." A record of incipient albinism has come from Beaufort West.

Measurements. The shoulder height of a cheetah is about 76 to 83 cm (avg. 31 in). Theodore Roosevelt and E. Heller give the following measurements for two East African males: head and body, 1.295 m (4.2 ft) and 1.244 m (4 ft); tail, 73.6 cm (19 in) and 77.4 cm (30 in). Meinertzhagen recorded a Kenya female with a total length of 2.36 m (7.7 ft). A male from eastern Transvaal, measured by Vaughan Kirby, had a total length of 2.03 m (6.7 ft) between pegs, 2.31 m (7.6 ft) along curves, and a tail length of 83.8 cm (33 in). Kirby estimated the average total length of males in that area—over curves—to be about 2.13 m (7 ft), of which the tail would take up 78.7 cm (31 in).

Weights vary from about 40 to 72 kg (avg. 126 lb). Females are somewhat smaller and slimmer.

The measurements of Indian cheetahs as given by Jerdon and others do not differ materially from those of African specimens.

Distribution. On the African continent, cheetahs could originally be found in all suitable regions from the Cape to the Mediter-

ranean. In Asia, the distribution of the species extended through Palestine, Syria, the northern parts of the Arabian peninsula, Iraq, Iran, southern Turkmenistan, Afghanistan, and Baluchistan to Sind, Punjab, Rajputana western Bengal, and central India, south to the Deccan and possibly Mysore. It was never found north of the Ganges, nor east of Bengal. According to Sterndale it was most common at Jaipur and in Hyderabad.

In a revised edition of Sterndale's book, published in 1929, Frank Finn pointed out that the cheetahs used for hunting by Indian princes were now all imported from Africa. He quoted Colonel J. C. Founthorpe as stating: "There is no doubt that the cheetah is now very rare indeed. General Sir Afzul Ul Mulk of Hyderabad told me that there are no cheetahs in the Hyderabad territories—a very large area. A few survive in the Berar districts of the Central Provinces . . . Rajhmar Sadul Singh of Bikaner shot three cheetah out of a bunch of five, or more, which he came across a year or so ago." Frank Finn added: "It is evidently high time that this poor animal were protected, as the lion is in the Gir forest."

Stockley, writing in 1928, regarded the Indian cheetah as very scarce everywhere. It has not been reliably recorded since 1948, and was declared as extinct in 1952. The species is probably extinct in Turkmenistan, where it always was very rare and local, but from Iran comes the good news that cheetahs are holding their own in the eastern deserts, their numbers being estimated as possibly exceeding two hundred.

Harrison considers the cheetah as probably extinct in Arabia, there having been no reliable records since 1950, when four were killed by Aramco employees, one in northern Saudi Arabia, three others near the Saudi, Jordan, and Iraq intersection. The species was last reported from Kuwait in 1949. Writing in 1935, F. S. Bodenheimer mentioned it as still occurring in the Negeb, in Transjordania, and in the Palestinian mountains. He saw many skins, sold by Bedouins from Beersheba. It may have hung on in Jordan and in the Negeb until 1948 or 1949, and there were fairly recent reports of tracks having been seen in the latter area.

In May 1967 a cheetah was shot while stalking sheep in the desert, 15 km (9 mi) north of the 125-km (78 mi) marker on the Cairo-Alexandria road. This incident induced Harry Hoogstraal and several of his associates to search for other recent Egyptian records, and they came across rumours of one having been shot from aboard an oil company helicopter in 1954. That same year, however, another was definitely killed near a checkpoint on the Sidi Barrani-Salûm road. In 1964, a cheetah was reported from the southern

edge of the Qattara Depression. The Qattara area may, in fact, be the cheetah's last refuge in the country, for tracks have been noticed in its vicinity on various occasions, and the Bedouins questioned by Hoogstraal were positive about the species still occurring north of the Qara oasis.

Cheetahs have been reported from southern Tunisia and Tibesti fairly recently, but as far as Morocco is concerned, Panouse regards their presence as doubtful. During the 1920s, Strohl reported a dozen captures near Zanaga, while Cabrera found the animal to be well known to the troopers of the Ifni desert police.

In 1934, Shortridge stated the cheetah to be almost, if not completely exterminated in the Cape Province, in Orange Free State, Natal, and in the southern parts of Transvaal, but widely distributed in Botswana and South-West Africa. It has since been reintroduced in the Umfolozi and Hluhluwe reserves of Natal and is reported still flourishing in South-West Africa. In 1960, numbers in the Kruger National Park were estimated at 136, and when I visited this reserve in 1961, Dr. Pienaar, the resident biologist, told me that the species had declined so greatly in recent years as to cause serious worry with regard to its future. One of the reasons for this he thought to be the change of habitat, too much burning having destroyed the open grass lands and brought about a considerable increase of bush. In a radio broadcast from Johannesburg a couple of years ago, the number of cheetahs in the Kruger National Park was stated to be around two hundred. Efforts are apparently being made to strengthen the population by introducing animals from South-West Africa.

Financed by the International Fur Trade Federation, Norman Myers carried out a survey of the cheetah's present status in East Africa. He arrived at the conclusion that the species is already in trouble and will probably be much more so in the near future. This, of course, raises the question: What do we know about the cheetah's former occurrence in the East African countries? The information Paul Matschie of the Berlin Museum was able to give in his writings on the mammals of German East Africa—now Tanzania—was scanty in the extreme, for the naturalist-explorers Boehm and Stuhlmann, on whose notes his work was mainly based, never met with it at all. Two skins in the museum came from Usandawi and Ussukuma respectively, areas situated in the northern part of the country, and there were reports of British sportsmen having encountered cheetahs in the immediate vicinity of Kilimanjaro. The Serengeti Plains, where the species is fairly common, were of course hardly known at that time. In Uganda, the cheetah used to be sparingly distributed

through the eastern and northern parts only, and it has now disappeared from many places due to rapid increase of settlement and cultivation. For the present, R. M. Bere reports it as almost, if not entirely, confined to Karamoja.

As far as Kenya is concerned, Sir Frederick Jackson put it down in 1894 as by no means uncommon "on the Kapiti and Athi Plains," while C. H. Stigand reported it in 1913 as "found in small parties on most of the plains of British East Africa," enumerating the Athi Plains, the Uaso Nyiro, the vicinity of Nyeri and the Tana River east of the Ithanga Hills as places where he saw it. Roosevelt and Heller called it a "fairly common species in East Africa." Schillings, who camped for long periods in what is now the Amboseli Reserve, said: "The cheetah, too, occurs in Masailand, but is very rare, and I have only seen it twice."

Writing between the two wars, A. Blainey Percival stated: "Coming abroad by day as his habit is, the cheetah falls easy prey to the gun; hence it is becoming very scarce. At one time cheetahs were common about 9 miles out of Nairobi, but they have been nearly exterminated and few remain. Not many years back I saw a couple near the old Nine Mile Camp."

One is thus left with a definite impression that cheetahs were always local and never very numerous—certainly not as common as lions and leopards.

Today, Nairobi National Park probably has the highest population density of cheetahs anywhere in the world. In the course of about twenty safaris undertaken during the last five years, I have encountered the species regularly in the Amboseli Reserve and in the Serengeti National Park, fairly frequently in the Mara Reserve and occasionally in the Tsavo National Park and in the Samburu Reserve. I have also seen one during a short visit to the Tarangire National Park. Thanks to national parks and game reserves, the cheetah may actually be more common today than it was during the period Percival wrote about.

Habits. The cheetah is an inhabitant of dry, open areas, such as steppes, clayey deserts, semi-deserts, grass lands, orchard-like savannahs, acacia scrub, and light woodlands. Dense forests are never entered, nor does the species occur in thick bush. It is predominantly diurnal, though said occasionally to hunt in bright moonshine. Early sportsmen and naturalists all referred to it as being so shy that its habits could only be studied with great difficulty.

Today's tourists are disappointed if they do not get close-up photographs of cheetahs in the Serengeti National Park. Audrey Moore, who lived in the area for several years between the two wars, only had occasional glimpses of a cheetah family and never obtained any pictures at all. "The grown female, as is the case with most cheetahs," she wrote, "was so timid that it was impossible to approach her." She closed her chapter on cheetahs with the following words: "Of all the bush animals, except perhaps eland, they remain shy and aloof, living by their speed, running down small buck, and stalking ground birds, harmless to man and the larger game, living out their lives quietly; beautiful lithe creatures that are a joy to watch in the freedom of their native bush."

In a book describing his first East African expedition, published in 1924, Martin Johnson captioned one of his pictures: "A tame cheetah—the wild ones went too fast for the camera." On my first visits to the Serengeti National Park in 1949 and 1954, my experiences were the same as Martin Johnson's—the cheetahs "went too fast for the camera." The few which at that time could occasionally be encountered in Nairobi National Park also bounded away the moment they caught sight of a car. During the second half of the fifties, however, cheetahs in Nairobi National Park, in the Amboseli Reserve, and on the Serengeti Plains began to tame down in a most remarkable manner. As more and more families grew up in the various reserves, the youngsters were the ones who first lost the old fear of motor cars, and in 1964 the cubs of one Nairobi Park litter started to come up to cars and to sniff at them with great curiosity.

In order fully to illustrate this incredible change in cheetah behaviour, I shall here describe—from one of my notebooks—an encounter with one especially tame family which lived in Nairobi National Park at the end of the 1960s. On the occasion I am writing about, the three cubs were twenty-two months old, but had not yet separated from their mother. When we came across them, they obviously had had a meal a short time before, their faces still showing traces of blood, but the mother seemed to be fully aware of their healthy appetites, for she paid considerable attention to some hartebeests, among which there could be seen one or two calves. It looked as if she might hunt again, and several cars congregated near by, their occupants hoping to witness the chase.

The female did, in fact, go through the motions of a preliminary stalk, but the hartebeests either spotted her or got her scent. As they gradually drew off, the cheetah mother relaxed and sat down. With the tension of an impending hunt gone, the cubs began to play, running after each other. They were known to regular visitors of Nairobi National Park as the "roof-rack climbing cheetahs," and it did not take long for them to dash toward a sedan and to jump onto

it. Two settled down on the roof, their tails hanging down outside the windows, while the third stood on the hood, putting its nose against the wind-screen and pawing the wiper.

From time to time, the three had fun and games all over the car, pushing one another around and jumping off and on, while cameras were clicking on all sides. Suddenly they left the sedan, tore around the cars as if playing hide-and-seek, and then decided to climb upon a Land-Rover that had just arrived. They only stopped their play when the mother began to walk away. As soon as she had gone about 50 to 70 m (avg. 195 ft), they ran after her. One of these youngsters now has a family of her own, and she still occasionally jumps onto a car. No doubt her cubs will begin imitating her in the near future. It certainly is very much easier to observe cheetahs today than it was in Audrey Moore's time.

Cheetahs are usually encountered singly, in couples, or in family parties which may consist of a female and her cubs or of youngsters just having left their mother. Two adult males occasionally team up and roam around in company for a while. Population density has been estimated at one cheetah per 72 km² (28 mi²) in the Kruger National Park, at one per 102 to 127 km² (avg. 44 mi²) on the Serengeti Plain. In Nairobi National Park, which has a surface of 114 km² (44 mi²), twenty-five to twenty-six cheetahs can at times be counted.

In the Serengeti National Park the movements of cheetahs depend very much on those of their preferred prey, the Thomson's gazelle. A female observed by Schaller shifted her hunting ground by almost 12 km (7 mi) just as soon as her cubs were mobile enough. She stayed within a range of about 10 km² (4 mi²) for one and a half months and then moved on again. Females bringing up families in Nairobi National Park are much more sedentary, generally remaining within a certain area until the youngsters are able to fend for themselves. The borders of these hunting ranges are very ill defined, however, and there is a considerable amount of overlap. McLaughlin, who made a study of the Nairobi Park cheetahs, estimated the ranges used by two families to cover 82 (32 mi²) and 76 km² (29 mi²), respectively. Two males were found to roam over 102 km² (39 mi²).

I have always found males to be of rather vagrant habits, much less attached to a home range than male lions usually are. Schaller stated that he had no evidence of any kind of territorial defence, and I can say the same after having watched cheetahs in Nairobi National Park—and elsewhere—for a great many years. They have a tendency toward mutual avoidance, but this operates in a peaceful

and very matter-of-fact way on sighting each other, perhaps also on coming across scent marks. There is a certain amount of spraying, although this habit seems to be less developed than in leopards and especially in lions.

As might perhaps be expected of an animal with no marked territorial or social habits, the cheetah does not greatly indulge in vocalization. I have never heard anything resembling a roar, though I have heard cheetahs moan on catching sight of lions. The female uses a chirping sound to call her cubs, which quite often utter a birdlike twitter. A fairly big youngster coming back after chasing a hare called out "puits-puits," and the mother answered with a low "ya." When a female and a cub are licking each other, they often purr, deeply and continuously, and on such occasions there may also be a few very catlike "meaows."

A big male, which walked as if he were following a scent track of sorts, gave vent to a series of calls best rendered as "grr-keow-grrr-keow-yaow-yaow-yaow-grrr-yaow-grrr yaow-kyaow, kyaow, kyaow." The "kyaows" were brought forth with considerable vigour, as could be seen from the contracting of the flanks. It was not possible to follow this cheetah for any distance, but I have a strong suspicion that it might have been after a female.

Cheetahs have large, lively, and very alert eyes. Living in open country they spot their prey a long distance away, and one gets the impression that hearing and smell are of a very minor importance as far as hunting is concerned. According to an observation recorded by E. W. Temple-Boreham, the well-known warden of the Mara Reserve, a cheetah's nose may, however, be keener than is usually assumed:

> Three cheetahs were seen on the edge of a plain near the Barkitabu area. They were obviously hungry, so it was decided to make the experiment of trying to feed them. Part of a Thomson's gazelle was dragged on the end of a rope tied to the back of a car, and the bait was dragged up wind and past where the cheetahs were sitting. They all appeared to be very interested, and one could see them sniffing the air and getting the scent of the drag—which proves that a cheetah's sense of smell is not as dull as people think. As the kill was slowly dragged past them for the second time, two of the cheetah ran out and one actually grabbed the kill, which was then released. The cheetah concerned carried off his prize to the shade of the nearest tree, where he was joined by his two companions, and they all had a good feed.

Scent probably plays a major part in getting the sexes together at mating time.

Despite its doglike build, the cheetah nevertheless moves with

true feline grace and elegance. Cubs are good climbers and often play about on trees. Adults like to jump onto fallen or leaning tree trunks to look around, but it is rare for them to do any real climbing.

The appearance of a cheetah causes more excitement among the inhabitants of the veld than that of a lion. I have seen pied crows and fiscal shrikes swoop down at them with persistence and determination, and the behaviour of other animals is well shown by the following notes jotted down while I watched a cheetah crossing an area literally swarming with game:

> Wildebeests, hartebeests, Thomson's and Grant's gazelles not only stare at it, but follow in its wake. From time to time one group or another wheels around and canters away, only to stop and approach again. Four blackbacked jackals suddenly turn up. One of them barks as it becomes aware of the cheetah, two trot along behind it. The wildebeests and hartebeests snort, while the gazelles eventually take flight. The hartebeests are particularly excited, galloping to and fro, gambolling around. Two crested cranes fly over the cat, land nearby and keep pace with it on foot. They jump with uplifted wings when it once turns towards them. At times a regular procession is moving over the plain—the cheetah in the lead, followed closely by the two jackals, with eight or ten hartebeests forming the main body. The cheetah only loses its "retinue" when it finally crosses a deep valley.

Giraffes pay as much attention to a cheetah as they do to a lion and their behaviour may well give warning to gazelles and impalas which, of course, have a much more limited range of vision than the walking watchtowers.

From my own observations in Nairobi National Park, in the Amboseli Reserve and in the Serengeti National Park, the following animals fall prey to cheetahs: Thomson's gazelles, Grant's gazelles, impala, hartebeest, both calves and adults, wildebeest calves, bushbuck, and hare. I have seen them run, without success, after zebra, wart-hog and bat-eared foxes.

The list compiled by Kruuk and Turner for the Serengeti area is fairly similar to this: adult Thomson's gazelles (52%), young Thomson's gazelles (4%), wildebeest calves (22%), adult hartebeests (4%), hartebeest calves (4%), zebra yearlings (4%), hares (4%). An even greater predominance of Thomson's gazelles is shown in Schaller's list: Thomson's gazelles (91%), hartebeests (4%), Grant's gazelles (2.3%), wildebeests (1.9%), impala (1.1%), hare (1.1%), topi (0.8%), dikdik (0.4%). In the Kruger National Park, impala make up 68% of the prey. The kills found in course of one year, 1959, were enumerated as forty-seven impala, two water-buck, one wildebeest calf, six kudu calves, three wart-hog, one roan calf, and five reed-bucks.

It can thus be said that cheetahs mainly prey upon small- and medium-sized antelopes, on the calves of large antelope, and on the odd zebra foal. They will occasionally overpower an adult hartebeest. Stevenson-Hamilton knew of a bull tsessebi and a bull waterbuck being killed, but considered both incidents as exceptional.

I have had many opportunities of observing cheetahs in action. On a recent safari to the Serengeti National Park, I watched a female begin to stalk some Thomson's gazelles the very moment she discovered them. The grass was short, there was no cover of any kind, and she advanced in full view of the thomies, moving slowly, on stiff legs, with her head stretched out in front and held below shoulder level. When she ran from a distance of 90 or 100 m (avg. 312 ft), the gazelles had not yet become aware of her presence. They saw her as she was streaking toward them and fled instantly, but she caught up easily and bowled one over by hitting it on the rump with a forepaw. As her victim went down, she grabbed its throat and was still holding it when we drove up to her. She relinquished her grip about five minutes after she had caught the animal and looked around for a few moments before dragging the carcass to the place where her cubs were waiting.

This was a very typical hunt, with everything going off without the slightest hitch. In dealing with somewhat larger and stronger animals, a cheetah may find it less easy to make a quick kill. In the Amboseli Reserve, we once followed a mother with two about half-grown cubs. She was obviously searching for prey, but this did not prevent her from occasionally joining in the youngsters' games. Suddenly, however, she spied some zebras with a small foal. She froze in her stride, watched for a while, and then stalked forward, while the cubs took cover in a patch of Sodom's apple scrub. She disappeared behind some bushes, and we saw the zebras move off rather nervously, without, however, having spotted her. After a short while they returned, but at the same moment a small herd of Grant's gazelles turned up. Next we saw the female cheetah coming around the bushes, her attention now focused on the gazelles. She did not have to do much stalking, for they were moving in her direction, and she ran when they were about 70 m (230 ft) away. The gazelles tried to get away, but she quickly overtook an adult animal and hit it on the rump hard enough to cause a wound. The grantie—a female—fell, but managed to struggle to its feet again. It flashed away in a different direction, and for a couple of seconds it looked

as if it might escape. Making an all-out effort, the mother cheetah caught up with it a second time. After having run 200 to 250 m (avg. 246 yd) she was too blown, however, to direct another well-aimed blow at the gazelle's rump. Instead, she simply hurled herself at her quarry, knocking it over through the sheer impact of the collision. She was at its throat before it could get up once more, and at that moment the cubs were already running toward the fallen animal.

The gazelle still moved its legs when we hurriedly drove up, but a few seconds later its struggles had ceased. The cheetah continued to squeeze its neck for several minutes more, and, when she let go, the hair on the gazelle's throat was ruffled, but no blood could be seen. Death had been entirely by strangulation.

Another female pulled her victim to the ground in what might almost be called a "hand-to-hand" tussle. She had settled on a small hillock not far from a forest in Nairobi National Park, with her cubs playing around her, when suddenly she tensed, watching something we could not see. She bounded down from the eminence and went off. The cubs remained behind and stopped playing the moment the mother left them alone.

We followed her, and she crossed the track close to our car, slowly putting one foot in front of the other, her eyes fixed on whatever it was she had spied on the forest edge. There was an expanse of fairly high grass interspersed with scattered bushes between the track and the trees, and we saw her making full use of this cover, going into a half-crouch and keeping low as she moved on. She quickly disappeared from sight, and we now discovered her objective to be a bush-buck, an adult but still youngish male browsing on the bushes fringing the forest. After a few minutes the cheetah reappeared. She ran almost at once, from a distance of only 25 to 30 m (avg. 30 yd), and reached the buck before it really was aware of what was happening. She did not bowl it over at once, however, for we could see the buck's reddish-brown back above the scrub for quite a few moments after she had tackled the sturdy animal. It was impossible to see exactly what was happening, but it appeared that she had grabbed the bush-buck's throat—or perhaps its muzzle—while it was still standing. It once uttered a half-strangled barking or bellowing sound and finally went down, the lush vegetation masking the rest of the drama. A few minutes later we saw the cheetah drag the kill through the high grass. She left it behind a bush, went a few metres, and sat down under a tree, looking around. After some time she moved a short distance in our direction, and we heard her birdlike call. Next moment the cubs came running from about 250 m (820 ft) away. The whole family then went to the bush where the kill lay.

About an hour before she killed the bush-buck, that same female had failed to catch an impala out of a herd which suddenly came in her direction. Having absolutely no cover, she crouched low and dashed at the antelopes when they were only a very short distance from her. She was, however, somewhat half-hearted in her effort and missed, the impala literally "exploding" in all directions, grunting in alarm as they raced away.

Approaching a herd of gazelles in the open, a cheetah apparently singles out one animal and goes for it without letting itself be diverted by any others, even though they might offer a better chance for a kill. I once saw one race along the full length of a line of running thomies, and I expected it to swerve inward suddenly and knock one over, as it could very easily have done. But no—its attention was firmly focused on a gazelle near the head of the line, and the cheetah ran itself to a standstill, trying to catch up with it. We finally found it stretched out in the grass, panting violently, while the gazelles all escaped unscathed.

Randall Eaton, who studied cheetahs in Nairobi National Park, paid some attention to their respiration and found an animal which had been breathing at a rate of 60 a minute while lying in the shade to have a respiratory rate of no less than 156 after having chased, caught, and strangled a wart-hog. This capacity for going through the most amazing fluctuations in the breathing rate must be an essential part of the cheetah's adaptation to speed.

How fast is a cheetah's sprint? In most textbooks the speed attained is given as between 100 and 110 km (avg. 65 mi) per hour, and one manual of mammalian biology even puts it at 148 km (92 mi) per hour. A tame cheetah which was clocked running behind an electric hare reached a top speed of 70.7 (44 mi) on three occasions, while one chased by a car in Kenya has been reliably reported as having done 82 km (51 mi) per hour over 183 m (200 yd). My own observations have long ago made me doubt whether a cheetah ever really exceeds 90 km (56 mi) per hour, and I now find Kruuk and Turner more or less agreeing with this view, although stipulating that somewhat higher speeds may be attained over short bursts. While not quite as fast as some of the more imaginative writers have made it out to be, the cheetah is thus able to run at a speed higher than that attained by a gazelle or an impala. The antelopes, however, are capable of a much more sustained effort. They still have plenty of wind left when the cheetah, after having run a few hundred yards, has to give up the race.

It is customary to compare the cheetah's way of hunting with that of wild dogs, but it seems to me that this comparison is not really

valid. Wolves, Indian wild dogs, and African hunting dogs work in packs, and I can vouch for the almost ruthless efficiency of this team effort in the case of the latter species; the cheetah generally runs down its prey as a lone hunter. It has taken to the kind of pursuit characteristic of canids, without, however, also adopting canid social co-operation, and while it has evolved physically to a point where it is faster than any of the wild dogs, the cheetah did not acquire their stamina. Every run after game thus means an all-out effort of the highest order, and if it ends in failure—as it very frequently does—the animal will have to recuperate for half an hour or so, preferably in the shade of a bush or tree, before it is capable of hunting again.

Game animals seem to have a fairly accurate idea of the cheetah's limitations. On the Serengeti Plains I once watched one stalking two Thomson's gazelles, a male and a female, which had settled down to chew the cud on a slight rise of the ground. As usual, the cheetah advanced very slowly at first, but in this case it even lay down each time one of the gazelles looked in its direction, in exactly the same manner a lion or leopard would have done during a similar approach. A passing car attracted the gazelles' attention and made them get up. The cheetah got up, too, watched for a few moments, and then sprinted uphill. It took some moments for the thomies to realize what was coming, but then they darted away at full speed. The cheetah very nearly caught up with one, but it may have been slightly handicapped by having had to run upward—anyway, the thomies got away, and the cat lay down panting after a run of about 300 m (984 ft). The gazelles, however, did not go far. They soon stopped to look back, and when the cheetah walked downhill again, they followed behind in order to keep their exhausted pursuer in sight.

Cheetahs must kill a lot more small "game" than is evident from published lists of prey. In Turkmenistan, according to Ognev, they used to prey largely on small desert mammals and birds. In East Africa they kill ostrich chicks up to a fairly large size, and when ostrich breeding was a paying proposition, farmers lost considerable numbers of chicks to them. It is said that rising birds are occasionally struck down in mid air. I certainly have seen cheetahs strike at vultures in this way, without, however, knocking one to the ground. In the course of one safari, two hares were seen to be caught by cheetahs, both after they had been put up by our cars.

Once, at Amboseli, when a mother with two cubs was moving across an area of scrub consisting of dense, but very low bushes with quite a lot of bare ground in between, one of the youngsters suddenly put up a hare and chased after it. The mother and the other cub immediately joined in the fray, not streaking along as cheetahs usually do, but bounding gracefully over the tops of the bushes. For a while the mother was close behind the madly zigzagging hare, but with so much cover about she finally lost it. The game scout we had along in our car was utterly delighted at the way "Sungura," the hare—which in African folklore plays a part similar to that of Reynard the Fox—had got the better of its pursuers.

I have seen a bat-eared fox chased by a cheetah suddenly turn round and face its pursuer, uttering a series of blood-curdling snarls. The cheetah came to a sudden halt, backed, and then bounded away, with the little fox following for about 10 to 15 m (avg. 43 ft) before it turned and ran in the opposite direction. Repeating this manoeuvre three times more, the plucky canid managed to reach the safety of its burrow.

After killing a small- or medium-sized antelope, a cheetah will usually drag it into the shade of a bush, even though it may only be a scraggy little whistling thorn. In the case of the cheetah mother which brought down a full-grown Grant's gazelle at Amboseli, the two cubs were chewing on the victim before it was completely dead, one near the anus and the other on the left haunch. The mother, although still panting heavily, picked up the prey almost at once and took it to a nearby clump of bush. She was so exhausted, however, that it took her a good twenty minutes to recover to a point where she was able to join the youngsters, who meanwhile had again been busy on the gazelle's rear end, without, however, making any very noticeable inroads. When she did get going at about 8:20 A.M., the female began at the groin and, assisted by the cubs, ate away the skin and flesh of the flank, gradually exposing the paunch. Guts were uncovered as the cheetahs worked their way forward, chewing off rib ends and opening the thoracic cavity from behind. At one moment the female turned the kill over and dragged it a couple of metres, so that the paunch and the guts fell out. One of the cubs scraped up grass and vigorously scattered it over the paunch, an action it repeated several times in course of the next two hours or so. The mother from time to time sat up and looked around, obviously making sure that the kill was not attracting any other predators. No lions or hyenas appeared, but the first vultures came gliding down an hour later, and, as they gradually became more numerous, the cheetahs often looked at them.

The cats fed crouching flat or with hind-quarters elevated, making little use of their forepaws in the process. As the sun gradually moved around the bush, the female several times dragged the kill into deeper shade. She took a rest from eating at about 10:05, but

the cubs went on without a pause, even though they already were quite visibly distended. The mother rejoined them at 10:30, but gave up again at 10:45, walked half around the bush and lay down. The cubs, by now really bloated in appearance and with "I'm not feeling too well" expressions on their faces, went on feeding intermittently. The mother returned for one more snack, but soon had enough, and by 11:13 all three cheetahs had retired from the kill, which consisted of not much more than a bloody skeleton. The head was untouched, and the lower parts of the limbs were still covered with skin. The paunch and guts lay where they had fallen, and the thoracic cavity had been completely emptied. Our game scout—who knew the family well—thought that this Grant's gazelle should last the cheetahs for about three days.

A female observed by Schaller, which had two cubs three to four months old, killed twenty-four Thomson's gazelles in twenty-six days. A female with two large cubs caught six thomies during a period of five days. Solitary cheetahs have been found to kill every second or third day, which would amount to a total of about 150 animals taken in one year.

Cheetahs are dirty feeders and always get blood smeared all over their faces. When the meal is over, however, they will lick each other clean in a very short time. Once a cheetah leaves its kill, it usually does not come back. Stevenson-Hamilton, with his long experience of the Kruger National Park, wrote: "I do not think cheetahs care much for carrion. At all events I have never heard of their eating it, and from the manner they neglect their own kills, it is probable that they prefer not only to hunt their meat, but to eat it fresh." Since his time, a few instances of scavenging have been reported from the Kruger Park. I have never seen a cheetah at another animal's kill, nor has Schaller, and he thinks that being so low in the predator hierarchy, cheetahs are in most instances too timid to investigate possible sources of meat.

We have, however, Major Temple-Boreham's evidence that hungry youngsters can be tempted to accept carrion. On one occasion I saw two fairly big cubs stop their play and watch a tawny eagle catching—or finding—something eatable about 50 m (164 ft) away. They got very excited, uttered some tiny little sounds, and then bounded toward the bird. The eagle flew away, and the cheetahs appropriated whatever it had been feeding on, gobbling it up before I could see what it was.

Cheetahs cannot safeguard their kills in the way leopards do, and they frequently find themselves deprived of their hard-won prey by other predators which may have been led to the spot by the sight of

the circling vultures. Schaller states that of 238 kills made by cheetahs in the Serengeti, no less than twenty were taken by lions before the rightful owners had finished their meal, eleven by hyenas and one by a leopard. He even had evidence of cheetahs abandoning the remains of a kill in the face of a solid phalanx of white-backed vultures advancing to within 1 or 1.5 m (avg. 4 ft). I have often watched cheetahs rush at vultures, scattering them in all directions, but have never seen them give way to the birds. Jackals, too, are chased away.

One day, in Nairobi National Park, three cheetahs were heading toward a river-bed, obviously with the intention of settling down for the hot hours in the shade of the bushes fringing its course. Spotting some lions on the opposite bank they sat down and eyed them nervously. One uttered a low moaning sound, similar to that of a tom cat facing a rival. A few minutes passed, and then the cheetahs got up and began to move away, slowly and with evident reluctance. We were just preparing to follow them, when a single lioness—which we had encountered earlier in the day—came toward them in a straight line from about 500 m (1600 ft) away. The cheetahs had meanwhile sat down again, looking longingly at the river with its shady bushes. Whether they really did not see the rapidly approaching lioness or simply left flight to the last moment, relying on their fabulous speed, the lioness was able to get to within about 30 m (98 ft) of them. Suddenly she rushed forward and went for the two cheetahs nearest to her in no uncertain manner. The spotted cats immediately turned into two yellow streaks. The lioness had absolutely no hope of catching up with them, but she nevertheless pursued the cheetahs for about 60 m (200 ft). She then turned toward the third cheetah and chased it just as fiercely. For a moment the distance between the two animals seemed to narrow, but then the cheetah really got into its stride and the lioness was left far behind. She soon gave up the chase and walked toward the river, while the cheetahs disappeared over the horizon.

On another occasion we saw two youngish lionesses chase a cheetah mother and her three cubs. They almost caught one of the youngsters, and it was only by a supreme effort that it managed to escape. The cheetah mother several times let the lionesses get very close, probably trying to divert their attention from the cubs. It was only when she knew her family to be safe that she streaked away like lightning. One of the lion families observed in Nairobi National Park once managed to surprise and kill a sleeping cheetah, a very old male whose senses may have been getting somewhat dull. In the Serengeti National Park, too, a cheetah has been known to be killed by lions.

One cannot escape the conclusion that in the merciless struggle for survival, the cheetah is up against heavier odds than other members of the cat family. Catching prey is such an effort that after each run it finds itself practically incapacitated for half an hour or so. Forced to hunt out in the open, it is attacked and chased by lions more often than the leopard with its notoriously secretive habits. Unable to safeguard its kills in the way the leopard does, it quite frequently loses them to other predators and has to do more hunting than would really be necessary. Not only for its food, but also for its security, the cheetah depends not on stealth and concealment, but on speed alone, and although it does appear as a masterpiece of streamlined design—and is, in fact, the fastest thing on four legs—one is sometimes left wondering whether adaptation to a very special way of life has in this case not gone just a little bit too far. There have been instances of cheetahs—both in captivity and in the wild—injuring a limb in some all-out sprint, and there are few creatures more helpless than a cheetah with a damaged leg, incapable of catching prey and unable to get away from enemies.

Even pregnancy appears to pose grave problems through slowing down and endangering the magnificent runners. Astley Maberly reports: "Recently, in the Letaba area of Kruger Park, a pair of lionesses were seen (and photographed) deliberately attacking and very severely mauling an obviously pregnant cheetah, who must almost certainly have ultimately died of her wounds, as she could barely limp very far."

I once saw a female, showing every sign of being near to parturition, fail lamentably in an attempt to catch a Grant's gazelle. Everything seemed to be in her favour, only a very short spurt was needed, but she was quite evidently hampered by the state she was in, and the gazelles outdistanced her easily. All these factors must have combined to make the cheetah a somewhat local species and to keep its numbers far below those of leopards and lions. No wonder that it tends to fade away as soon as the scale becomes tipped just a little more to its disadvantage, be it through human persecution or through unfavourable changes of its habitat.

High cub mortality does nothing to help the cheetah in its somewhat precarious status. In the Kruger National Park and on the Serengeti Plains it has been assessed at about 50%. In Nairobi National Park it was around 43% when McLaughlin made his study, and since that time there has been something of an improvement, with several cheetah mothers bringing up large litters with almost no losses.

There probably is no definite breeding season, although births

may occur more commonly at certain times of the year than at others. In the Serengeti National Park, for instance, birth months were found to be evenly distributed between January and August. Schaller had no evidence of any litters born between September and December. In Zambia, most births have been recorded from November and March, in eastern Transvaal during the second half of the year.

Several males may follow one female and fight over her, rearing up and hitting each other with the forepaws. Schaller describes courtship as involving a lot of churring and chirping. The female rolls on her back, dashes away, comes back again, and paws at the male. As far as my own observations go, couples stay together for only a very short time. Gestation lasts from ninety to ninety-five days. Litters can number from three to six cubs and the average is probably four. The cubs are born blind and open their eyes after four to eleven days. Their weight at birth varies from 250 to 300 g (avg. 7.8 oz). Two cubs born at the Krefeld Zoo weighed 370 g (13 oz) on the third day and showed a daily increase of 40 to 50 g (avg. 1.6 oz), attaining a weight of 8.33 kg (19 lb) in five and a quarter months. The first cub born in P. Spinelli's private zoo crawled around soon after birth and stood up unsteadily at the age of one week. It walked—still rather wobblingly—when it was twelve to thirteen days old. The three cubs of the second litter stood up on the tenth and walked on the sixteenth day. The first teeth appeared on the twentieth day. Within eighteen days, Spinelli's cubs ate donkeys' meat regurgitated by the mother. Young cheetahs are weaned in about three months in the wild. In captivity they may be suckled until they are five months of age. The milk-teeth are replaced at about 240 days.

Newly born cubs are well hidden in dense, high grass or thick scrub, but they come out fairly soon and begin to follow their mother about at an early age. With their grey cloaks and funny little faces they look truly adorable, even more engaging, if that is possible, than lion cubs. As the mother walks sedately along, they tend to fall behind. At short intervals, however, they chase after her, overtake her, and run in front. If their enthusiasm carries them too far ahead, the female calls "prrr-prrr," and they stop, giving little "peep-peeps" in response. When the mother settles down for a rest, they first climb all over her and demand to be suckled. They may then play about in the near vicinity. The mother keeps an eye on them all the time, and whenever they show a tendency to stray, she utters her "prrr-prrr," which brings them running back immediately.

Watching young cheetah cubs bounding through the grass in that characteristic see-saw gait of theirs, reminds one of honey-badgers, both with regard to colour and to motion. The honey-badger or ratel is probably the most aggressive of African mammals—I have had one "charge" my Land-Rover—and it advertises this fact by wearing a striking livery of white or ashy grey above and blackish brown below. Its area of distribution covers most of Africa and extends through Palestine and Syria to India, thus coinciding to a remarkable degree with that of the cheetah. Could it be that at the time they need it most, young cheetah cubs get a certain amount of protection from this resemblance? Rather far-fetched, you may say. Possibly—though there is a certain amount of evidence to show that the sluggish, absolutely unprotected crested rat of the Kenya forests owes its survival at least partly to the fact that its shaggy black and white coat resembles that of the very well protected African polecat or zorilla.

As the cheetah cubs get older and take on adult colouration and markings, they become even more playful. They chase each other with truly amazing vigour and sometimes they stand up and wrestle, trying to catch hold of one another by the throat. From the age of eleven or twelve weeks onward, one of their favourite games consists in jumping at each other from behind, hitting the partner on the back with a forepaw in exactly the same way they will later hit their victims. The mother often joins in these romps and dashes around with a zest not less than that of her offspring. When the family settles in the shade of a bush, there usually is a considerable amount of mutual licking, not only between mother and cubs, but also between the cubs themselves.

When the mother goes off to chase game, young cubs take cover in high grass or in a patch of scrub and wait until she calls them out or brings the kill back to them. Later on, they sit and watch, ready to run up as soon as a kill has been made.

One morning in Nairobi National Park, the presence of a cheetah was brought to my attention through the panicky flight of a herd of impala. Looking at the cat with our field-glasses, we discovered that she carried a prey in her mouth and was followed by five cubs with cloaks still well visible. The family was moving toward a strip of riverine forest, and we quickly started the car, hoping that we might cut the animals off from cover and get some photographs. This was when the cheetahs of Nairobi Park were still very shy, and the sight of our car made that family run so fast that they crossed the track about 30 m (98 ft) ahead of us. At that moment, the mother dropped her prey, which we now recognized as an impala fawn. She

stopped on the edge of the forest and looked round as if she were in half a mind to come back and fetch it, but then decided against it and vanished among the bushes. There was still the possibility, however, that she might return for her kill after having deposited her family in a safe place. We therefore waited patiently. Suddenly, to our amazement, the fawn came alive, got up, and stood, somewhat wobblingly, on its long, stiff legs. As we drove up, it came to the car and let itself be picked up without the slightest struggle. There was not a single scratch on it, and we later released it near the impala herd, none the worse for its adventure.

At the time I was greatly puzzled by the fact that the cheetah mother had not immediately killed the little animal. I now think that she took it for her cubs to practise on, in the same way a domestic cat lets her kittens toy with a mouse. I have since then seen a cheetah mother bring in a young Thomson's gazelle for this very purpose, and from what has been recorded by Schaller, Kruuk, and Turner, this type of behaviour seems to be fairly common on the Serengeti Plains.

By playing with each other or with animals caught by their mother, and through looking on while she chases game, the cubs have their hunting instincts awakened and developed at an early age, and soon they will bound after any hare or other small animal that has accidentally been put up during one of the family's extensive rambles. I once spent a very amusing half-hour watching half-grown cheetahs playing about with youngish wart-hogs. It was nothing very serious, the cats always bounding away at top speed when one of the porkers turned to face them.

Cubs are known to have stayed with their mother for almost two years, but the separation more often seems to take place between the ages of fifteen to seventeen months. Once they are on their own, young cheetahs may at first have a rather difficult time, but experience is quickly acquired. In Nairobi National Park, where females frequently raise litters of four, the youngsters usually remain together for some time, and at least one of these bachelor groups became quite expert at killing adult hartebeests. What an efficient predator the cheetah might have become if, in addition to developing its phenomenal speed, it had also taken on social habits similar to those of the lion. Too efficient, perhaps.

Birth intervals of seventeen, eighteen, and nineteen months have been reported from Nairobi National Park. There is, however, also a record of a female which only mated again when her cubs had attained an age of sixteen months. Having lost her litter, a female will very quickly come in heat again. Maturity is attained early, at twenty-

one to twenty-two months, according to observations made in the wild.

In captivity, one cheetah is on record as having lived for fifteen years and seven and a half months. A few have reached ages of ten, eleven, twelve, thirteen and a half, and fourteen years, but as a whole, the species has so far not done very well. Circularizing a great number of zoos, H. van de Werken found that average longevity had been three years, one month, and thirteen days between 1957 and 1961, and five years, one month, and fourteen days between 1962 and 1966. It does at least look as if there were a gradual improvement. Post-mortem examinations revealed liver diseases—especially cirrhosis—feline distemper, tuberculosis, pneumonia, and enteritis as the main causes of death.

Nothing is yet known of longevity in the wild, though one feels that it may prove to be lower than that of lions, tigers, and leopards. Age is sure to seriously handicap the lone sprinter long before it makes itself felt in the lone stalkers, not to speak of the sociable lions where there is always the possibility of eking out an existence on the kills of others.

Cheetahs occasionally become the victims of lions, as we have already seen, and in the Serengeti National Park one was killed by a leopard and taken up a tree. They most probably suffer less from diseases in the wild than in captivity, although they have been known to contract anthrax. A specimen from northern Kenya was found infected with an organism identical to *Eperythrozoon felis,* which causes haemolytic anaemia in domestic cats. The same animal also carried a nematode, *Spirocera lupi,* which can cause damage to blood-vessels. I have never had an opportunity of examining a cheetah for parasites, but a young and very emaciated female killed by a lion in the Serengeti National Park was found infested with ticks of the species *Rhipicephalus carnivoralis.*

Cheetahs are harmless to man. There never has been an unprovoked attack, and the very few cornered or wounded cheetahs which were reported as having charged were probably trying to get away. Kermit Roosevelt rode down on horseback the few specimens required by the Smithsonian Institution. After a mile or two of fast galloping, the cheetah would suddenly crouch flat on the ground, completely done up and offering no resistance at all.

My wife and I saw our first cheetah fairly soon after having arrived in Kenya, when a friend took us to the then quite newly established Nairobi National Park. We chased the animal—something that was banned a long time ago, and very rightly so—and after a short time the cat not only crouched flat as described by Roosevelt,

but it also snarled at us in a way I have never again experienced.

Even though some African countries long ago awarded full protection to these beautiful and inoffensive animals, a considerable number of them have been killed for their skins. One of the famous "roof-rack climbing" cheetahs of Nairobi National Park became the victim of poachers, who stoned it to death after having driven it up a tree. They were caught and punished, though their sentence was far below what I would have regarded as adequate.

Edward Hyams has expressed doubts as to the thousands of cheetahs used for hunting having always been wild-caught specimens and not animals bred in captivity. We have, however, the testimony of no less an authority than Jehangir, the son and successor of Akbar the Great who, in 1613, wrote in his memoirs: "It is an established fact that cheetahs in unaccustomed places do not pair off with a female, and my revered father once collected together 1000 cheetahs. He was very desirous that they should pair, but this in no way came off. At this time a male cheetah having slipped its collar, went to a female and paired with it, and after two and a half months, three young cubs were born and grew up. This has been recorded because it appears strange." So keen was Akbar on his breeding experiments that, according to another source, he allowed some to run free in the palace gardens, letting them walk about and hunt after their fashion, but without obtaining the desired success.

The first modern zoo to succeed in breeding cheetahs was the one in Philadelphia, where cubs born in 1956 lived to an age of three months. In 1960, a couple obtained from South-West Africa produced cubs in the Krefeld Zoo. The first to be born was probably eaten by the male. The next two were taken away, but the fourth was left with the mother—now separated from the male—which nursed it properly for two days and then bit off one of its legs. The two surviving cubs were successfully nursed by a domestic cat. Two cubs born in the Arnhem, Holland, zoo were eaten by their parents.

Considering the obvious difficulty in getting cheetahs to breed, it caused something of a stir in 1966 when P. Spinelli had two litters born in his private zoo in Rome, the first of one cub, the second of three. Since then, the zoo in Montpellier, France, has joined the ranks of successful cheetah breeders, and as these lines are being written, there comes the news that Julian Tong, a former care-taker of the Nairobi National Park's Animal Orphanage, has reared five cubs in the Safaripark at Hilvarenbeek, Holland. It certainly begins to look as if a breakthrough has at long last been achieved.