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Abstract: In this extract of the Arabian mammal's book, the author provides a detailed description of the external and cranial characteristics, teeth, Arabian Peninsula distribution with a distribution map and the world distribution of the cheetah *Acinonyx jubatus*.

Dans cet extrait du livre sur les mammifères d'Arabie, l'auteur donne une description détaillée des caractéristiques externes et crâniennes, de la dentition, de la distribution dans la Péninsule Arabe avec une carte de distribution et de la distribution mondiale du guépard *Acinonyx jubatus*.

{465}

The Mammals of Arabia

VOLUME II

Carnivora · Artiodactyla · Hyracoidea

By

DAVID L. HARRISON

Ph.D., M.A., M.B., B.Ch., F.L.S., F.Z.S.



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examined by the author and proved by the presence of typical rosettes to have been a leopard. The absence of a complete specimen from E. Oman prevents a certain identification at present of the racial affinities of the leopards there.

General Distribution: *P. pardus* is widely distributed in tropical Africa ranging from Sudan, Somaliland, Ethiopia, W. Africa and possibly Northern Nigeria southwards to Cape Province, also in N. Africa, including Morocco, Algeria and Egypt. The range of the species in the Arabian peninsula is detailed above and it extends to Asia Minor, the Caucasus, Persia, S. W. Russian Turkestan, Baluchistan, Pakistan, Kashmir, Tibet and south in the Indian peninsula to Ceylon, east to Nepal, Burma, China, Manchuria, Amur region of E. Siberia, Malay States, Vietnam, Java and the Kangean Ids.

Remarks: Four subspecies of Leopard are recognisable in the region, even though individual variation is a marked feature in this species. The extent of intermeditation between these forms is not yet clear, except in the case of *P. p. tulliana* and *P. p. saxicolor*, which are less clearly defined from one another and clearly intergrade in Iraqi Kurdistan and E. Asia Minor; the material seen from Iraqi Kurdistan seems nearer to *saxicolor* on the whole and is here referred to that race.

This dangerous and destructive predator is found in mountainous and hilly terrain in the region, seldom if ever venturing into the open plains or desert, in marked contrast to the Cheetah. Although everywhere scarce, the number of recent occurrences in the region is surprising, considering the destructiveness of leopards to domestic flocks and the danger of its attacking man himself. Certainly every man's hand is against it and Sanborn and Hoogstraal (1953) describe the organised hunts in the Yemen whenever there is news of a panther in a populated area, which either obtain the predator or drive it out of the district; apparently pitfall traps are constructed in Yemen. Although predominantly a nocturnal hunter it is occasionally seen abroad in daylight. Raswan (1935) came upon an adult female with her two cubs in the Jebel Tubayq region, resting in the shade and feeding on the remains of a gazelle in the open. A Sleyb hunter accompanying him killed the adult panther and ate its heart raw, believing he would derive strength from it. As recently as 1965 a leopard attacked a Beduin shepherd in Upper Galilee (W. Ferguson, *in litt.*); the animal was stabbed by the wounded shepherd, and they were both found lying side by side, alive but unable to move. The shepherd was fortunate indeed to survive this attack. A leopard cub captured in this same region in 1940 (Anon, 1946³) was taken to Safad, where the half-grown cub was eating 15-20 pounds of meat a day. Subsequently named Tedi, he was moved to Tel Aviv Zoo, where he grew into a fine and powerful adult described by Hardy (1947) as more heavily built than Indian leopards. Attempts to mate Tedi at first failed, indeed his courtship with a promising young female Indian panther proved fatal, for Tedi killed her with his strong paws. Leopards feature in the mosaic floors of Byzantine times and were clearly familiar to the early hunters of Assyrian times, who frequently depicted them in early art (Van Buren, 1939). Bury (1911) describes the grating cough uttered by a panther, attracted to his camp at night in the mountains of South Arabia by the blood of slaughtered goats. The leopard shows interesting colour variation throughout its great range, tending to be darker and larger in humid tropical zones, the South Arabian *P. p. nimr* is unusually small and pale and it is interesting to note that the melanistic variant or Black Panther, which occurs in the Far East and is even the dominant type in S. Malaysia (Pocock, 1939) has apparently never been encountered in this arid region.

The pale long-haired *P. p. saxicolor* of Kurdistan has often been erroneously referred to as the "Snow Leopard," an understandable confusion in view of the very Ounce-like appearance of this handsome race in winter pelage. The leopard produces from two to four cubs, after a gestation of thirteen weeks, usually in a cave or a secluded lair amongst boulders, sometimes in a porcupine's burrow (Pocock, 1939).

Genus ACINONYX Brookes, 1828

These are large cats with very long, thin limbs and characteristic external build suited to their specialised hunting habits, consisting of the pursuit and capture of prey by speed in open terrain. The Cheetah presents many peculiarities of structure, setting it apart from other cats, which have justifiably led to its inclusion in a separate subfam. *Acinonychinae*. The pattern consists of solid spots, without hollow rosettes, the tail is ringed with black distally and the face is marked with a long black stripe passing from the anterior canthus of the eye to the mouth. The digits are without trace of cutaneous lobes constituting claw sheaths; the claws of the four main digits on the fore and hind feet are comparatively blunt and slightly curved, only partially retractile, but the claw of the first digit is large, sharp and strongly curved. The interdigital webs are shallow, so that the digits spread widely. The pads are hard, the digital ones compressed distally, the trilobate pads with a pair of low ridges; the posterior carpal pad is conical and pointed.

The bones of the skull are remarkably light and thin. The vault is highly domed above, with its highest point just in front of the small postorbital processes. The postorbital width is very great, subequal with the width of the braincase at the posterior roots of the zygomata. The basicranial axis is inclined upwards, forming an angle with the basifacial axis. The zygomatic arches are not salient in front, virtually in the same plane as the outer maxilla. The infraorbital foramina are small, narrow and sometimes divided. The anterior and posterior nares are large. The presphenoid lacks any alate median expansions. The mandible is light, with a deep horizontal ramus, straight below; the chin is prominent and angular; the anterior portion is not elevated, and the alveoli of the incisors and canine are in line with those of the posterior cheekteeth; there is no trace of postcanine space when the jaws are closed. The inner lobe of the upper carnassial is greatly reduced, lacking any protocone. The cheekteeth are highly trenchant, with unusual development of the secondary cusps of the premolars. The dental formula is

$$i \frac{3}{3} \quad c \frac{1}{1} \quad pm \frac{3}{2} \quad m \frac{1}{1} = 30.$$

ACINONYX JUBATUS Schreber, 1776 Cheetah.

1776. *Felis jubata* Schreber, Säugeth. 3: pl. 105 (1776), text, 392, 586 (1777). Cape of Good Hope, South Africa.

The nominate form is extralimital.

Acinonyx jubatus venaticus Griffith, 1821

1821. *Felis venatica* Griffith, Vert. Anim. Carnivora, 93. India.

1828. *Acinonyx venator* Brookes, Cat. Anat. and Zool. Mus. Joshua Brookes, 16, 33. India.

(?) 1913. *Acinonyx raddei* Hilzheimer, S. B. Ges. Nat. Fr. Berlin, 291. Merv, Transcaspia.

Type Locality: India.

Diagnosis: It is readily distinguished from *Panthera pardus* by the absence of hollow rosettes in this species and the presence of a long black stripe extending from each eye to the mouth and by the other distinctive features of the toes, skull and teeth listed under the genus. The race *A. j. venaticus* is possibly distinguishable from *A. j. jubatus* of S. Africa by its thinner, less woolly winter coat and by the absence of the mane, probably in the summer coat. It may also average smaller, although the available evidence is very scanty and inconclusive. The greatest length of an adult male skull from Iraq is 172 mm. The tympanic bullae are more inflated in this race. (Pocock, 1946).

External Characters: This is a large cat, the flat skin of an Indian specimen of this race from Jubulporé (BM. 32.4.7.1) measures 77 inches in total length of which the tail comprises 27 inches (Pocock, 1939). This Indian skin, apparently in winter coat, has the hair somewhat lengthened towards the

tip of the tail, where it attains about 70 mm. The head is rather short and thick, with a high forehead, the rhinarium dusky and rugose, a distinct naked philtrum dividing the upper lip. The vibrissae are rather short, the supralabial group about 55 mm. long, mixed black and white in colour. The ear is low and rounded, thickly haired on both aspects, with well-developed fringes on its antero-internal aspect attaining about 34 mm. The limbs are very long and slender, strikingly different from *P. pardus*. The claws are cream-coloured, shorter, blunter and less recurved on the four main digits of both fore and hind foot than on the pollex, which possesses a sharp strongly recurved claw. The claws are always more obvious than in *P. pardus*, owing to the lack of cutaneous lobes constituting claw sheaths. The pads are naked and hard; the digital ones compressed distally, the trilobate pads with a pair of low longitudinal ridges extending from their posterior margins the posterior carpal pad with an elevated conical point. The pelage of the Indian specimen from Jubulpore, probably in winter coat as described by Pocock (1939) is fairly long and soft, with a little underwool, attaining about 25 mm. on the back and sides, 90 mm. on the belly and with a distinct mane from the occiput to the shoulders, where it attains 80 mm. The pattern differs in no respect from that of African Cheetahs. A black stripe about 8 mm. thick curves downwards from the anterior canthus of the eye to the upper lip at about its midpoint. The solid black spots are variable in size, the largest on the flanks about 20 mm. in diameter. The eyes are tufted with black on their postero-superior margins. The ears are tawny at their summits and black at the base externally, whitish buff internally. The tail is spotted proximally and ringed with black distally, the tip mixed black and white in this specimen, the subterminal black band very broad. The small spots on the head and nape are arranged linearly, those elsewhere are irregularly scattered and rather more closely set in the mid-dorsal region. The general colour is Tawny Buff (nearly matching Pablo, G7, Plate 12, Maerz and Paul, 1950) becoming gradually paler on the flanks, not sharply defined from the underparts, which are whitish from the chin to the tail (at least as far as the terminal rings) including the inner sides of the legs. The anterior part of the upper lip is white, extending up to the rhinarium and accentuating the black facial stripe. The latter is further contrasted by whitish spectacular markings round the lower and antero-superior eye margins, bordering the upper part of the stripe at the anterior canthus. The mane is irregularly tufted with black, giving the appearance of linear spots when the hair is depressed. The feet are tufted with brownish black around the digital pads and bases of the claws, their superior aspects pale tawny, the spots extending down to the bases of the digits. The soles are a little darker tawny than the dorsal aspect of the feet. Local variation is not known; Raswan (1935) published a photograph of an Arabian Cheetah in the flesh (precise data unknown) in which the pattern appears essentially similar to the Indian example described above. It is unfortunate that practically no material of the Arabian Cheetah, now possibly extinct, has been preserved. Corkill (1929) possessed a living juvenile male taken between Abu Ghar and Busaiya in the Shamiyah Desert of Iraq. At about two months of age the fur on the back was fawn coloured and quite long (two and a half to three inches) and unspotted, the belly and limbs tawny and spotted black, the spots on the tail towards the tip forming rings; the tail was more than half the length of the body. The head was broad, round and high, the ears relatively large, roundish and black externally, very mobile.

Cranial Characters: The skull of *A. j. venaticus* is remarkably light and thin-boned for its size, differing strikingly from *P. pardus* in this respect as well as in general configuration and numerous details of structure; especially striking features are the highly domed vault and great postorbital width of this species. The rostrum is moderately long and broad, with the nasals inclined more steeply downwards than in *Panthera pardus*, forming an angle of 37° with the basifacial axis. The nasal aperture is strikingly larger in this species and more backwardly slanted, its outline cordate. The nasals are very deeply excavated at their anterior extremities, with long, narrow antero-lateral processes; the

posterior extremities are broad, not attaining the level of the frontal processes of the maxillaries. The nasal branch of the premaxilla is extremely narrow and does not extend beyond the level of the upper margin of the nasal aperture, so that it is widely separated from the frontal, the area of contiguity between the maxilla and nasal unusually large. The orbits are large, irregularly ovoid, with their antero-inferior margins decidedly less outwardly curved than in *P. pardus*. The interorbital region is broader and very much deeper than in *P. pardus* owing to the highly domed vault, the depth of the skull at the summit of the orbits clearly exceeding the median depth of the braincase between the bullae. The superior surface of the interorbital region is more strongly convex in its antero-posterior diameter than in *P. pardus* and is marked by a more pronounced median hollow over the fronto-nasal suture. The postorbital processes are very weak, less salient than in *P. pardus*, with scarcely any postero-superior ridges. The postorbital region is strikingly broader than in *P. pardus*, the width of the skull immediately behind the postorbital processes is subequal with the breadth of the braincase at the posterior roots of the zygomata, the outline of the braincase broadly hour-glass with a shallow constriction midway between these two points. The zygomata are scarcely outwardly flared in front, so that their outer margins are almost in the same plane as the outer borders of the maxillae, but their posterior roots are widely and abruptly salient. The sagittal crest is only evident posteriorly, but the lambdoid crests are well-developed and the supraoccipital is wider in this species, not bilaterally compressed above the level of the foramen magnum; in association with this the lambdoid crests are not hollowed out laterally. The dorsal profile is completely different from *P. pardus*, very highly domed, with the summit just in front of the postorbital processes and tolerably evenly convex from the gnathion to the lambda. The basicranial axis is deflected downwards beneath the braincase, forming an angle with the basifacial axis. The palate differs from that of *P. pardus* in the broader, shorter postdental portion in this species; the posterior palatine foramina are situated more posteriorly, level with the posterior cusp of the carnassial and the anterior palatine foramina are compressed antero-posteriorly, with their long axes transverse. The mesopterygoid space is rounded off in front and widest at the hamulars, its width and length subequal. The external pterygoid plates are completely vestigial, reduced to mere ridges. The tympanic bullae are only separated from the glenoid processes by narrow notches, in marked contrast to *P. pardus*; they are well inflated, with rather more prominent summits than in *P. pardus*, the meati rather small, without tubes. The mastoid processes are smaller than those of *P. pardus* but by contrast the paroccipital processes are more prominent and salient, their tips not applied to the backs of the bullae; the jugular foramen is smaller. The basioccipital has a powerful median ridge and is rather narrow, its width between the bullae slightly less than that of each bulla. The presphenoid is narrowly triangular, without trace of alate median expansions. The posterior nares are large, the nasal fossae enlarged backwards so that they are readily visible from below in the anterior part of the mesopterygoid space and the posterior part of the nasal septum is exposed. The temporo-mandibular joint is very broad, with its anterior lip scarcely elevated. The infraorbital foramen is small and laterally compressed, sometimes divided, situated considerably further backwards than in *P. pardus*, the anterior margin of its lateral plate lying obliquely above the principal cusp of the carnassial.

The mandible is light, with its anterior portion not elevated, so that the alveoli of the canine and incisors are in line with those of the cheekteeth, in marked contrast to *P. pardus*. The horizontal ramus is deep, tolerably straight below, with the submental region more prominent and angular than in *P. pardus*. The coronoid processes are tall and narrow, strongly backwardly slanted and with the tips a little recurved; the angulars are deep and rounded below, projecting subequally with the large condyles, and with their tips less inwardly deflected than in *P. pardus*.

Dentition: The teeth of *A. j. venaticus* differ in several striking features from *P. pardus*. The wide postcanine spaces

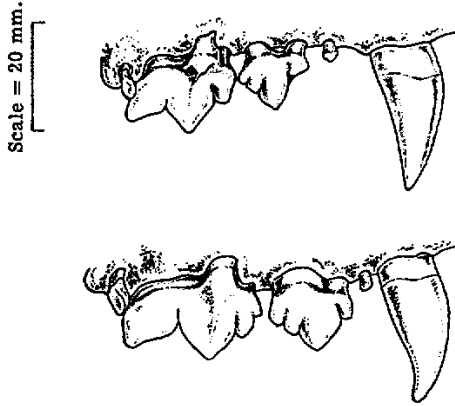


Fig. 147

Above. *Panthera pardus nimr*

B M 55. 428 ♀. West of Beihan, S. Arabia, 19. IV. 55.

Below. *Acinonyx jubatus venaliscus*

B M 43. 56 ♂. Busaiyah Wells, between Abu Ghar and Busaiyah, Shamiyah. July 1928. Died in London Zoo 5. VI. 32. Iraq. Collected by Dr. N. L. Corkill.

Left maxillary dentition of each, seen from internal aspect.

usual in the *Felidae* are lacking. The canines are less developed, but the cheekteeth are highly trenchant, with unusual development of the secondary cusps of the premolars and reduction of the inner lobe of the upper carnassial. The crowns of the inner upper incisors are expanded and spatulate, the cingulum of each forming a small cuspidate eminence behind, i^3 with faint bifurcation of the crown and a prominent postero-medial cingular cusp. The upper canine of an adult male is considerably less powerful than that of a female *P. p. nimr*; the shaft measures 24 mm. in height and 10.4 mm. in antero-posterior basal diameter; the shaft has a posterior cutting edge and lacks any cingulum, its tip distinctly recurved. The small upper premolar is very reduced, its crown area subequal with i^1 , crowded between the canine and second premolar. The second premolar is greatly developed, two-rooted and laterally compressed and with the cusps trenchant, four in number; the principal cusp is high and a little inwardly recurved, a well-developed secondary cusp attaining half its height on the posterior cutting edge and unusually developed anterior and posterior cingular cusps, all defined from their neighbouring cusps by deep incisions in the crown. The upper carnassial is very powerful, its length subequal with the height of the canine; its inner lobe is greatly reduced and lacks any trace of a protocone; the anterior cusp of the main sectorial part of the tooth has an additional small cingular cusp at its base anteriorly, absent in *P. pardus*. The upper molar is essentially as in *P. pardus*, reduced and displaced postero-internal to the metacone of the carnassial. The crowns of the lower incisors are bifid and expanded, that of i_3 more distinctly so, the outer cusp smaller and lower. The lower canine is weak and possesses a distinct antero-medial cingular cusp just above the level of the crown of i_3 . The two anterior lower premolars closely resemble the second upper pm in form, each laterally compressed, with four cusps, the principal one slightly recurved inwards, the secondary and cingular cusps unusually developed and defined by incisions in the crowns. The lower carnassial is also laterally compressed and powerful, differing from that of *P. pardus* in the presence of a distinct small cusp at the posterior base in this species, representing the talonid.

Measurements: See Table 155.

Distribution in the Arabian Peninsula: It is possible that the species is now extinct in the region. There have been no reliable reports of it since 1950 and although Beduin continue to speak of the existence of "fahad" unfortunately there is so much confusion in the application of popular Arabian

names that little reliance can be placed on such reports. It may, however, still linger in small numbers in some of the remoter desert areas, seldom visited by man. Information concerning its former range is incomplete and definite records only exist for the northern part of the peninsula. It may still exist in Iraq; Ainsworth (1838) reported it then not uncommon in the low districts of the Tigris and Euphrates and saw a captive in Baghdad. Danford and Alston (1880) reported one killed near Sevi, a small village on the Upper Euphrates, in Mesopotamia (presumed to be in Syria). Corkill (1929) told of a cub captured at Jumaimu, Muntafiq in 1925 and two more taken near Al Busaiya in the Shamiya desert of S. Iraq. The skull of one of these is in the British Museum. Hatt (1959) reviewed these records from Iraq and Syria; he stated that Robert Angorley reported them to be rare in the desert west of Basra and shipped one from there in November 1926. A hunter at K3 Station on the oil pipeline reported them in the Syrian desert to the west, between Tripoli and Haifa pipelines. Mr. Ian Kirkbride possesses photographs of a Cheetah which was killed by a car in the Syrian Desert of Iraq between H 1 and H 2 pumping stations during the years 1947-8. Dickson (1949) reported them in the Kuwait area. Hatt (*loc. cit.*) noted that four have been killed since 1950 by Aramco employees in N. Saudi Arabia; some of these were obtained a few miles south and some miles east of the Saudi, Jordan and Iraq border intersection. A photograph of one of these was exhibited by Morrison-Scott (1951); it had been killed by Mr. Tony Valentine in March 1950 on the tapline road in N. Saudi Arabia (31°32'N. 39°35'E). If any Cheetahs are still surviving in the northern peninsula this region seems the most likely area where they may be found. Carruthers (1909) saw tracks in the neighbourhood of Taima Oasis and he also (1935) saw tracks on the north side of Jebel Tubaiq. The species certainly occurred formerly in Jordan; according to Bodenheimer (1958) both Tristram and Schmitz reported it from Moab. The Schmitz collection included one from Zerqa Main (Anon, 1946). Tristram (1866.¹) noted its occurrence then in Gilead. Bodenheimer (*loc. cit.*) said that it has not been seen for over a hundred

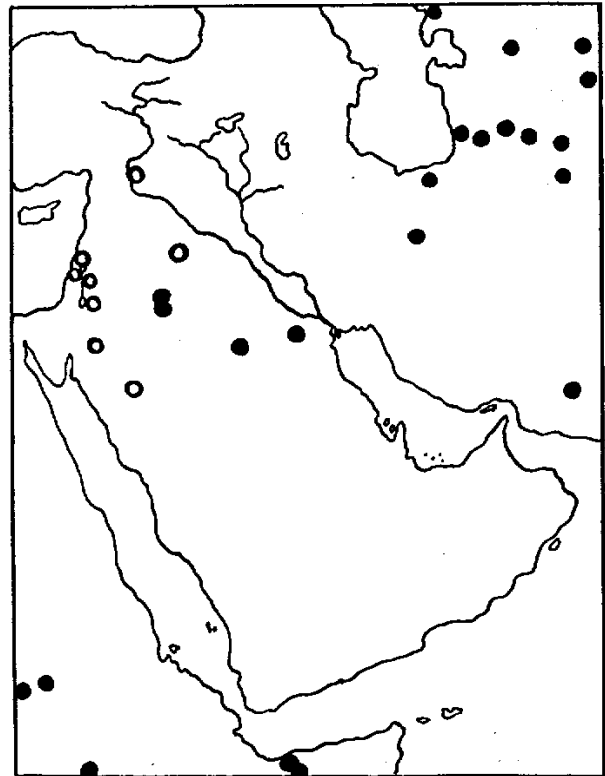


Fig. 148

DISTRIBUTION. *Acinonyx jubatus*

Table 155 *Acinonyx jubatus*

Coll and No.	GtL	CBL	ZB	BB	IC	C-M ¹	C-M ₁	M
<i>A. j. venaticus</i>								
IRAQ								
B M 43.56 Busaiyah Wells	172 app.	156.3	114.1	67.3	40.3	53.2	59.1	119.6

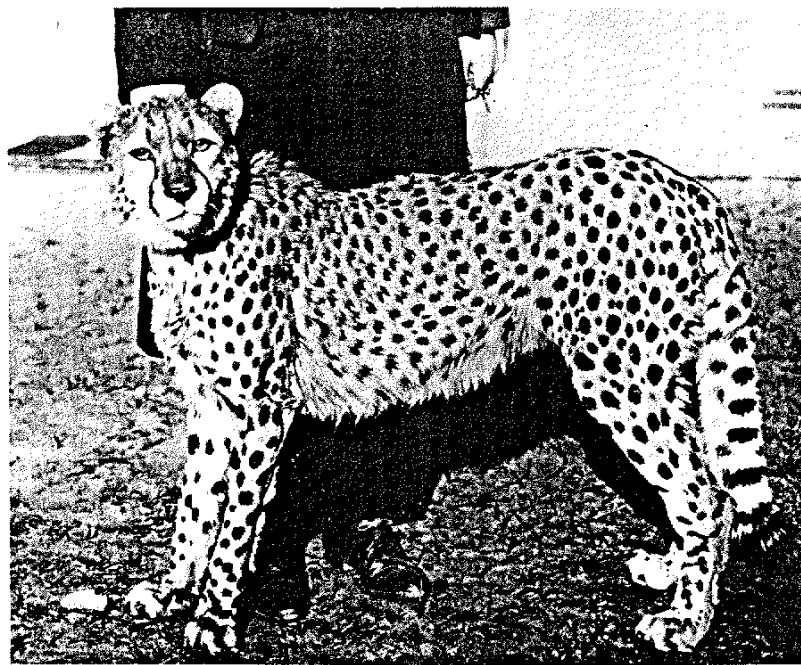


Plate 99

Acinonyx jubatus venaticus

"Felix", obtained at Busaiyah Wells, between Abu Ghar and Busaiyah, Shamiyah Desert, S. Iraq. July 1928.

Above—approximately two months old

Below—approximately nineteen months.

Photographs by courtesy of Dr. N. L. Corkill.

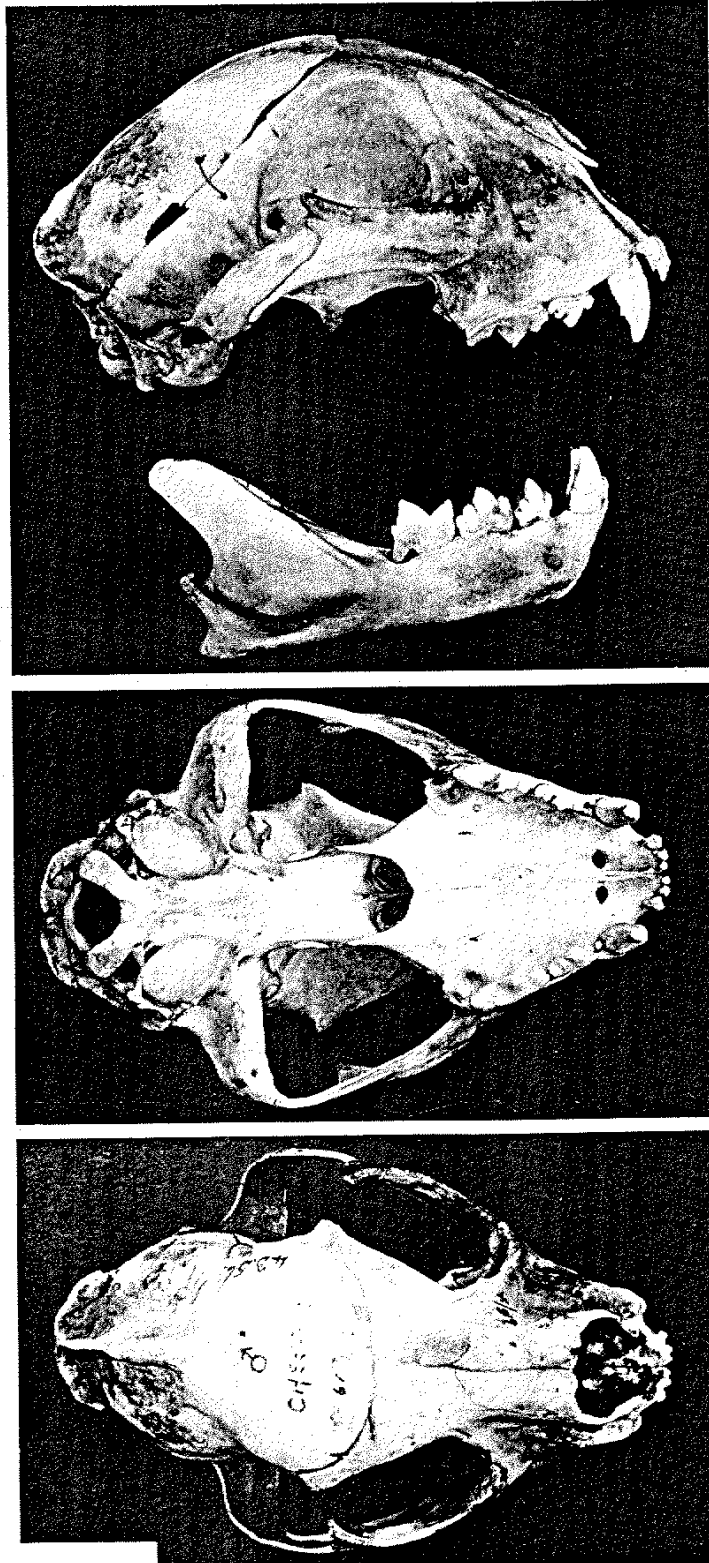


Plate 100

Acinonyx jubatus venalicus

B M 43.56. ♂. Busaiyah Wells, between Abu Ghar and Busaiyah, Shamiyah Desert. Iraq. July 1928. Died in London Zoo June 5th 1932. Collected by Dr. N. L. Corkill.

Presented to the Zoological Society on 12. III. 30.

Skull, lateral, ventral and dorsal views, with mandible.
Scale = 4 cm. Photograph by P. F. Harrison.

years in Israel, while Tristram (*loc. cit.*) noted the presence of a few remaining then about Mt. Tabor and in the hills of Galilee. Hardy (1947) mentions that two were seen in the Sinai Desert early in 1946, unfortunately without any more precise details. It appears that the Cheetah was formerly widespread in the plains and steppes of the northern peninsula.

General Distribution: *A. jubatus* is widely distributed in Tropical Africa ranging from South Africa and South-West Africa to Sudan, Ethiopia and Somaliland, Lake Chad and west to Northern Nigeria and in Northern Africa it is found in Rio de Oro, Morocco, perhaps Libya and Egypt. Its former range in the Arabian peninsula is detailed above and it extends eastwards to Iran, southern Russian Turkmenia, Afghanistan and Baluchistan and formerly in the northern Indian peninsula, south of the Ganges, from Bengal to Rajputana, the Punjab and Sind, also Central India and the northern part of the Deccan.

Remarks: The Asiatic Cheetah, *A. j. venaticus* appears doubtfully distinct from the typical race of S. Africa. The name is retained here provisionally, although it appears unfortunately very unlikely that further material will become available to facilitate a more precise assessment of the status of the Arabian Cheetah.

This species differs strikingly from the Leopard both in its habitat and method of hunting. Whereas the latter is a mountain dweller, preferring dense cover and stalking its prey by stealth, the Cheetah inhabits open terrain in Arabia, hunting gazelle in the lowland steppes and deserts (Carruthers, 1909). According to Ognev (1935) it also preys upon small desert mammals, such as hares, and birds. Its method of hunting is also quite different, relying upon its speed to overtake and

capture prey, after employing any available cover to creep up as near as possible. Its activity is mainly diurnal.

Corkill (1929) has recorded some valuable data about the two cubs captured between Abu Ghar and Busaiya in the Shamiyah Desert of S. Iraq. in July 1928. Their captor Nahaita, an Araif Arab had followed tracks to an old well and on throwing a stone down the mother Cheetah flashed out and away. He heard a whimpering and found two cubs in the well, one of which, a male aged about two months, (originally believed to be a female) was kept in captivity by Dr. Corkill. It was playful and affectionate, playing amicably with dogs, eternally stalking playfully a small terrier, leaping at it from behind the furniture. It was very restless when tied up and purred intensively when released. It slept fully outstretched and thrived on a diet of milk, cooked liver, meat and rice. This Cheetah, named Felix, subsequently came to London Zoo. The region where these cubs were captured was situated south-west of a sand belt that teems with life; there were many old disused wells scattered about and at least one perennial pool further north. The Cheetah is not aggressive towards man and can be readily tamed; according to Metaxas (1891) Beduin trained them for gazelle hunting in the nineteenth century. This was also done in India and it is interesting that, according to Pocock (1939) the animals were better captured adult for this purpose, after being trained to hunt by their parents. The whole build of the Cheetah is admirably suited for running at speed, and it is apparently able to achieve a speed of 45 miles per hour over short distances, and cover 100 yards in four and a half seconds. It lacks the normal feline trait of climbing trees when adult, but will do so if pursued by dogs. The period of gestation is said to be 90 days, the litter numbering two to four, born blind. A longevity of 15 years 7½ months has been observed in Giza Zoo (Shortridge, 1934).