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Abstract: The discovery of abundant skeletal remains of *Felis trumani* from a late Pleistocene deposit in Wyoming shows that it was as highly modified for cursorial locomotion as the cheetah (*Acinonyx*). Several other Pleistocene felids that have been regarded as pumas seem to be related forms. The late Pleistocene fauna of the Big Horn Basin in Wyoming is dominated by cursorial taxa.
electron flow in the system for the dyes to maintain their activity when we look back to nature, the scientific community is able to engage in conferences to share discoveries and innovations.
A Cheetah-Like Cat in the North American Pleistocene

Abstract. The discovery of abundant skeletal remains of Felis trumani from a late Pleistocene deposit in Wyoming shows that it was as highly modified for cursorial locomotion as the cheetah (Acinonyx). Several other Pleistocene felids that have been regarded as felines seem to be related forms. The late Pleistocene fauna of the Big Horn Basin in Wyoming is dominated by cursorial taxa.

Natural Trap Cave is a karst sinkhole feature of the Madison limestone (Mississippian, ca. 300 to 310 million years ago) located on the western slope of the Big Horn Mountains in north-central Wyoming. The United States Geological Survey Natural Trap Quadrangle shows the site in the NW 1/4, SW 1/4, Sec. 28, 894W, TSB9, Big Horn County, approximately 1510 m above sea level. The site is on a short grass and sagebrush plateau in the Juniper Breaks ecological zone.

Excavations conducted jointly by the University of Missouri, Columbia, and the University of Kansas, Lawrence, in Natural Trap Cave have provided the first substantial evidence for a cheetah-like cat in the North American Pleistocene.

Until September 1973, when it was gated and closed off for protection by the Bureau of Land Management, the cave was an open natural trap for any unwary animal. The cave entrance is from 3.5 to 4.5 m in diameter and is hidden from view until the observer is virtually at its edge. There is a free fall of at least 20 m from the entrance to the floor. The cave is bowl-shaped in cross section and has only one entrance, so there is no possibility of escape for any animal that might survive a fall into it.

The cave could not have been used as a den for large carnivores, nor was it suitable for human occupation. Besides the hazards of ingress and egress, a mean temperature of 5.5°C in the hottest month and a relative humidity of 98 percent militate against human comfort. Thus, there was no cultural filter to bias the species represented and no human or animal disturbance of the naturally deposited remains. However, the action of gravity and rainfall has resulted in the disarticulation of most of the skeletons. The extent of the deposit has not yet been determined. Our present excavations indicate fossiliferous deposits to a depth of approximately 3 m at which point large fragments of rockfall prevent further excavation. The bones are well preserved and lie intermingled with rockfall in 13 distinct strata.

Excavation of a small area (28 m²) in 1974 resulted in a collection of over 2500 mammal bones, most of which were from horses. Radiocarbon dates on horse bones from these excavations indicate that the strata are of late Pleistocene age, and that they had been首批 deposited. The deepest natural stratum trused in 1973 (about 1.5 m) was 17,770 ± 900 radiocarbon years ago. The next deepest stratum (1.4 m) was 19,020 ± 300 radiocarbon years ago. There are 1.5 m of fossiliferous strata below the older strata. Excavations during the summer of 1975 have added several thousand additional specimens, and the following large mammals are now known from the site: Canis sp. (wolf), Canis lupus (gray wolf), Canis latrans (gray wolf), Canis lupus (dhole), Mustela sp. (weasel), Galaxias galaxias (wolf-eel), Felis trumani (extinct cheetah-like cat), Panthera tigris (American lion), Equus sp. (large form), Equus sp. (small-sized), Camelops (camel), Oryx cowelli, and Oryx antilope (antelope).

The sample of small mammals is not quite so rich but includes Lepus (rabbit), Sylvilagus (cottontail rabbit), Oryzomys (field mouse), Neotoma (woodrat), and Microtus (vole). Our present information indicates that most of these animals lived contemporaneously. However, we intend to examine the faunal succession in detail at the conclusion of our excavations and will not be surprised to see changes in relative abundances or in actual faunal composition in the deeper strata. Almost all the taxa listed occur both in and below the strata that have been radiocarbon dated.

The structure of the late Pleistocene fauna in the Big Horn Basin appears to be unusual in that it is composed of highly specialized cursorial forms, suggestive of open country. The extinct bighorn sheep had much larger legs than the modern Ovis canadensis, and the dominant horse is the small-sized form.
The presence of an extinct field highly convergent with the cheetah (Acinonyx) in the development of long legs and other specializations for running also draws attention to this aspect of the fauna.

In 1841, Simpson (1) reviewed the large Pleistocene felines of North America and concluded that only three groups were present: pumas, jaguars, and Panthera atrox. Simpson regarded Panthera atrox as a giant form of jaguar, but later work (2) has established that it is better interpreted as an American lion. Some of the taxa that he regarded as pumas, such as Felis inexpecta and "Smilodon-topis" mooreheadii have reduced protocones on the P4. This same condition is also present in Felis siberi and F. trunmani. Among living felids only the cheetah (Acinonyx) has a strongly reduced protocone.

Felis trunmani was first described from a late Pleistocene cave deposit in Nevada (2). It resembles Acinonyx in having (i) small upper canines, (ii) a short face and a broad domed forehead (Fig. 1, a and b), and (iii) enlarged external and internal ears. The skull and mandible of the field from Natural Trap Cave can be matched almost exactly with that of F. trunmani, and it is to this species that we refer the Wyoming material. However, it is possible that one of the older names applied to North American cats with reduced protocones on P4 may prove to be the senior synonym of the late Pleistocene form. The other taxa range in age from late Pliocene (Blancan) to middle Pleistocene. The skeleton of F. trunmani has the distal segments of the leg elongated as in Acinonyx (Fig. 1, c-e). This is especially shown in the metatarsals, which are straight and much elongated.

In spite of the close similarity between F. trunmani and Acinonyx, we regard it as an example of parallelism rather than as a member of the latter genus. The shapes of many of the muscles appears in as many details of the skull and skeleton suggests that it may be more closely related to the puma, Felis concolor, than to Acinonyx. It probably has a long independent history in North America, perhaps derived from Blancan forms related to F. sibiricustri (4). The history of the cheetah-like cat from the Natural Trap and its North American relatives has been disguised by previous confusion with the puma.

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Possible Cyclic Nucleotide Regulation of Calcium Mediating Myocardial Contraction

Abstract. An inhibitor of adenylate and guanylate cyclases was tested on strips of left atria from rabbits. Effects of catecholamines (cardiotoxic) and of acetyleholine (cardiodepressory) were blocked, and positive force-frequency conversion was converted to negative. Ouabain produced only contracture without positive inotropy. The cardiotoxic effect of increased calcium remained. Data suggest that cyclic nucleotides modulate calcium associated with these stimuli.

It is generally accepted that the effects of a variety of autonomic agonists on myocardial contractility involve alteration of cyclic nucleotide metabolism (1). Cyclic adenosine monophosphate (AMP) is thought to exert its inotropic effect through activation of protein kinases with the subsequent phosphorylation of several control sites. Among the suggested effects of cyclic AMP are augmentation of calcium influx associated with a "slow-current" phase of the action potential (2), phosphorylation of sarcolemmic reticulum leading to an increase in calcium accumulation, and beat-to-beat regulation of myocardial contraction (3, 4). It has been proposed that protein kinase catalyzed phosphorylation of sarco-