



OF THE CATS.

DANIEL GIRAUD ELLITOT.

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PREFACE

AMONG the Families which constitute the Class Mammalia no more attractive one can be found than that of the Felide, as its members possess in the highest degree a beauty, both of form and colouring, most gratifying to the eye, and are also endowed with physical strength and weapons of offence not surpassed, and only rarely partially equalled, by any known creatures now living upon the earth. The Family comprises not only the largest and most ferocious of the beasts of prey, but also the graceful little animal that delights to make its home within man's abode, and is often his affectionate familiar friend. Much confusion has always existed in the synonymy of the various species; and many have been the views as to how many should be recognized. Early writers had but few specimens at their command upon which to form an opinion; and not knowing to what extent examples of a species varied from each other, they described a large number of individuals as distinct, and so, in the commoner ones more particularly, created a bulky and formidable list of synonyms, which have always been the cause of much trouble and perplexity to mammalogists. In order to unravel this mass of difficult material, it was necessary that the types of the various authors should be examined, scattered as they were in many collections, and, if possible, some of them brought together for comparison. I therefore visited the great Museums of Europe and America in which these desiderata were to be found, and studied the specimens carefully, and in one instance, through the kindness of the Director, was enabled to send some of the important examples to London to compare with others in the British Museum; and in this manner I became familiar with the types of nearly every author. The conclusions at which I arrived are given in the articles on the species in the body of the work. They were not reached without much patient investigation; and although I have reduced the number of species accepted by some writers nearly one third, I believe that all the forms which are really entitled to specific rank are represented in this Monograph. It is with pleasure I acknowledge the assistance I have received at various times from my friends on both sides of the Atlantic, and would express my thanks to Prof. Schlegel, who had placed at my disposal the types of M. Temminck and other specimens in the rich collections of the Leyden Museum, even permitting me to send some to London, where I could compare them with the types of the late Dr. Gray, and thus decide some very doubtful points very satisfactorily. To Prof. A. Milne-Edwards, for opportunities of examining at all times the magnificent series of these



PREFACE

animals in the Paris Museum, and to the late Prof. Gervais for giving me unrestricted access to the skulls and skeletons in the Museum of the Jacini der Plantes. I am much indebted. To the late Dr. J. R. Gray, who permitted me to examine his types and also all the material connected with this Family contained in the Dirickli Museum, and to Dr. Peters for the privilege of studying the specimens and skulls of the Polithe in the Bedini Museum, I am under many obligations. I would also express my acknowledgments to Prof. Baird for facilities given for inspecting the material in the Smithonian Institution, and to Mr. E. W. H. Holdsworth for the bign of examples of P. rubipinoss from Ceylon, which were of much importance in determining the specific value of the so-called P. jerdoni. I am also greatly obliged to the Directors of various Zoological Sofedies in miny citics for assistance rendered to enable me to examine the living animals continued in their gardens.

It is quite unsecessary for me to call attention to the Plates which ornament this volume. They are worthy of the great artist who produced them, and they bear an enhanced value from the fact that they constitute the last series of drawings from my friend's magical pencil that will be devoted to scientific illustration.

Mr. J. Smit, who lithographed the plates of several of my previous works, has been most successful in placing upon the stones Mr. Wolf's beautiful paintings.

The publication of the work has extended over more time than was originally expected; but the preparation of the Plates could not be hurried, and I desire to thank my Subscribers for patiently awaiting its termination.

. G. E.

INTRODUCTION.

THE FELDER, or the great Family of the Cats, existains those Beauts of Prey which are the most perfect in organization, attractive in appearance, and terrible in destructive power. Those dreadful weapons of offence, the texth and clavs, reach their falled evelopment in the members of this Family, and enable their possessor to lead a life of rapine and carnage, which is equally their delight and the object for which they were called into existence. Their lithe and agelle forms are clothed in casts to brillant colours, varied by fanciful markings of opposing luwes; while their casy carriage and proverbially allent movements constitute, in their attractive graces, the very poetry of

As he been my usual custom in overlax of this description. I shall first review the Liferanter of the Family, from the time of Jaineaus, then discuss the Classification, afterwards recognitude the General width have been proposed by different airbors, to be followed by an investigation of the Geographical Distribution of the species, and lastly present in the various articles the symmyny and life-listicary of each, as fully as our present induced greated when the consider the Liferanter of the Family, the review of which I commence with the twelfth edition of Limeaus, Systems Ximur, published in 1-176.

LITERATURE OF THE FAMILY.

1766.-LINNEUS, 'SYSTEMA NATURE.'

Seven species of the Felidæ are described, all of which are acknowledged at the present day. They are F. leo, tigris, pardus, onca, pardalis, catus, and lynz. Species 7.

1771.—LINNÆUS, 'MANTISSA.'

Felis concolor described. Species 8.

1772-73.—PALLAS, 'VERSCHIEDENE PROVINZEN DES RUSSISCHEN REICHS.'

Felis manul described. Species 9.

1776:-GULDENSTEDT, IN 'NOV. COMM. PETROP.'

Three species appear to be described, viz. F. rufa, caracal, and chaus. Species 12.

1777.—ERNLEBEN, 'SYSTEMA REGNI ANIMALIS.'

Fifteen specks are enumerated, twelve of which are valid, and four described for the first time, viz. F. uncia, jubata, tigrina, and serval. Species 16.

1778.—Schreber, 'Säugethiere.'

Eighteen species are given, but no new ones are described. The list is practically the same as that of Erxleben.

Nineteen species are enumerated in this work, none of which are described for the first time. All are valid but two-F. discolor, which is a black F. concolor, Linn., and F. capensis, founded on the Cape Cat of Pennant, which is the F. sereal of Erxleben.

1809.—Lacépède, in Azara's 'Voyages dans l'Amérique Méridionale,' Atlas.

On plate 10 of the Atlas accompanying the French translation of Azara's 'Voyages,' a figure of the Yaguarondi Cat is given; and beneath it the name Felis yaguarondi is attributed to Lacepede; and as this apparently is the first Latin designation affixed to the species, it would seem that Lacepede may be deemed its describer. Species 17.

1810 .- MOLINA, 'SAGGIO SULLA STORIA NATURALE DEL CHILI,' 2º edizione.

Felis colocolo described. Species 18.

1816 .- Desmarest, 'Dictionnaire D'Histoire Naturelle.'

A list of twenty-eight species is given in this publication, many of which are merely synonymous with others; and in some instances accounts of their habits are added. According to the determinations of this monograph, only twenty-two species are valid, of which four are described for the first time. These are F. canadensis, F. javanensis, F. eyra, and F. pageros. The bad species are no. 9, which is F. pardalis, Linn., F. melas, black variety from Java of F. pardus, Linn., F. mexicana = F. jaguarondi, Azara, F. guigna = F. tigrina, Erxl., and F. undata = F. javanensis, Desm. Species 22.

1817.—COVIER, 'REGNE ANIMAL.'

In this work the author gives a short list of the species of this family, but does not include all those known; no new species are described; and only one of those enumerated is synonymous with another, viz. F. melas, a black variety of F. pardus from the East Indies.

1818-1834.—Geoffroy St.-Hilaire and F. Cuvier 'Histoire Naturelle des Mammifères.'

In the second volume of this valuable work, a list of the species known to the authors is given, with plates and descriptions. Each article bears the date of its publication; and the species newly described will be found under the respective years in which they were published. Fifteen valid species are given, the remainder being melanisms, or other varieties of known species.

1820.—Desmarest, 'Mammalogie.'

Following his account in the 'Dictionnaire d'Histoire Naturelle,' the author gives a list of twenty-nine species of Felis. Two varieties of F. leo are recognized, viz. le lion de Sénégal, and le lion d'Arabie. The Black Conguar (F. discolor) is properly considered the same as F. concolor, Linn.; and the F. nigra of Erxleben is also made a synonym of F. onca, Linn., of which it is a melanitic variety. Two species of leopards are admitted-F. pardus, Linn., and F. leopardus, the former having larger and fewer spots than the latter. F. melas, ex Pérou, is deemed a good species, but should be referred to F. concolor, Linn., of which it is only a melanism. Various races of F. rufa, Güldenst., are given as distinct, such as F. fasciata, F. montana, F. floridana, F. aurea. These are all synonymous with F. rufa, Linn., from which they cannot be separated. F. caracal, Güldenst., is also regarded as possessing three races, namely:-var. A, Caracal d'Algérie, Buff.; var. B, Caracal de Nubie, Buff.; and var. C. Caracal de Bengale, Buff. These, however, are but one and the same species. F. galeopardus is probably the F. serval of Erxleben, described from an animal in captivity. F. undata, founded upon the Chat sauvage indien of Vosmaer, is apparently a hybrid between a domestic cat and probably F. chaus, Guldenst. F. obscura is a black F. caffra, Desm.; F. mexicana is F. jaguarondi, Lacép., ex Azara. Four races of the domestic cat are allowed as varieties of F. catus, Linn., viz: F. catus domesticus, Linn.; F. catus caruleus, Linn.; F. catus hispanicus, Linn.; and F. catus angorensis, Linn. In the Supplement to this work, two species are described-Felis caffra and F. bengalensis, the latter founded on Pennant's Bengal Cat. Species 24.

1820 .- F. Cuvier, 'Histoibe Naturelle des Mammifères.

A variety of F. tigrina, Erxl., is described as F. mitis.

INTRODUCTION.

1823 .- Desmoulins, 'Dictionnaire Classique d'Histoire Naturelle.' The marbled tiger is described as F. diardi, from Java. Species 25.

1824.—Horsfield, 'Zoological Researches.'

Specimen of F. javanensis, Desmarest, from Sumatra, renamed F. sumatrana.

1825 .- Vigors & Horsfield, 'Zoological Journal.'

Felis diardi, Desmarest, is twice renamed, as F. macrocelis and F. nebulosa.

1826.—Maximilian, Prinz von Wied, Beiträge zur Naturgeschichte Brasiliens.

Variety of F. pardalis, Linn., described as F. macroura.

1827.—Temminck, 'Monographies de Mammalogie.'

In this work we have a complete monograph of the family to date. Twenty-seven species are given, with their synonymy, and three described for the first time, viz. :-F. aurata, changed in the appendix to F. chrysothrix; F. pardina; and F. cercaria. To F. leo, Linn., are given three varieties:-a, Lion de Barbarie; b, Lion de Sénégal; c. Lion de Perse. F. sereal, Erdeb., is called capensis, F. borealis = F. canadensis, Desm.; F. caligata = F. coffra, Desm.; F. maniculata also = F. coffra; F. minuta = F. javanensis, Desm. A light variety of F. chrysotheis, Temm., is called F. celidogaster. Species 28.

1827.—Hamilton Smith, in Griffith's 'Animal Kingdom.'

A considerable number of species of the genus Felis are given in this work, those requiring notice here being as follows: -F. nebulosa = F. diardi, Desm.; F. chalybeata = F. chrysothrix, Temm.; F. catenata = F. pardalis, Linn.; F. diardi (non Desm.) = F. javanensis, Desm.; F. capensis = F. serval, Erxl. No new species are described.

1828.—VIGORS AND HORSFIELD, 'ZOOLOGICAL JOURNAL.'

Felis planiceps and F. temminckii, from Sumatra described. Species 30.

1830 .- Ehrenberg, 'Annales des Sciences Naturelles.'

Felis uncia, Erxl., redescribed as F. irbis.

1832.-J. E. GRAY, 'ILLUSTRATIONS OF INDIAN ZOOLOGY.' A figure of a new species of Cat is given in this work, and called F. ornata. Species 31.

1832.—Hodgson, 'Proceedings of the Zoological Society of London.'

F. temminckii, Vig. & Horsf., redescribed as F. moormensis.

1833.—Bennett, 'Proceedings of the Zoological Society of London.'

F. viverrina described as distinct. Species 32.

1834.—Geoffroy St.-Hilaire, Bélanger's 'Voyage aux Indes Orientales, Mammifères.'

F. rubiginosa described and figured. Species 33.

1836.-MARTIN, 'PROCEEDINGS OF THE ZOOLOGICAL SOCIETY OF LONDON F. marmorata described. Species 34.

1837 .- J. E. GRAY, 'ANNALS AND MAGAZINE OF NATURAL HISTORY.'

F. javanensis, Desm., redescribed as F. chinensis, F. caffra, Desm., as Leopardus inconspicuus (possibly a hybrid), and F. ornata, Gray, as F. pulchella.

1838 .- J. E. GRAY, 'ANNALS AND MAGAZINE OF NATURAL HISTORY.'

A light variety of F. chrysothrix, Temm., called celidogaster by Temminck, is renamed F. neglecta.

1839.—Lesson, Revue et Magasin de Zoologie.

F. serval, Erxl., from Senegal, redescribed as F. senegalensis.

A paper upon the skulls of the Felidæ and a revision of the family. Six new genera, besides those employed in the 'List of Mammalia,' are given, viz. Uncia, Neofelis, Pardalina, Catolynx, Viverriceps, and Pageros. No new species are described.

INTRODUCTION.

Another paper contains a further revision of the family. A young F. geoffroyi, d'Orb., is named F. pardinoides as distinct. F. bengalensis, Desm., is called F. wagata, Elliot, which name was never conferred by that author, he having in his list, according to Blyth, omitted the specific name of the cat intended, and merely said it was the wagati of the natives. A specimen of F. bengalensis, Desm., from Tenasserim, is described as F. tenasserimensis. A specimen of F. javanensis, Desm., whose habitat is given as India and Zanzibar, is described as F. servalina. Another specimen of F. pardalis, Linn., is described as F. pardoides; and F. geoffroyi, d'Orb., is redescribed as Pardalina warwicki. I may here state that I have examined all the types of this author, and compared some of them with types in continental museums, kindly loaned to me for the purpose, and have therefore good reason to believe that the rectification of the errors here recorded is correct.

A third paper published during this year contains no new species.

1867.-P. L. Sclater, 'Proceedings of the Zoological Society of London.'

F. temminckii, Vig. & Horsf., figured as F. aurata.

1869 .- J. E. GRAY, 'CATALOGUE OF CARNIVOROUS, PACHYDERMATOUS, AND EDENTATE MAMMALIA.'

This, so far as the Felidæ are concerned, is chiefly a reprint of the paper published in the 'Proceedings of the Zoological Society for 1867, containing the same arrangement. The specimen of F. javanensis, Desm., before described as F. servalina, is renamed and described as F. herschelii. F. chaus, Güld., is called Chaus jacquemonti; and F. affinis, Gray, Ill. Ind. Zool., which is merely F. chaus, Güld., is called Chaus catolynx. The Lynxes are divided into eight species, viz. :-L. borealis, Temm. (= F. canadensis, Desm.); L. lupulina, Thunb. (= F. cercaria, Temm.); L. isabellinus, Blyth (= F. lynx, Linn.); L. maculatus, Vig. & Horsf. and L. fasciatus, Buff. (= F. rufa, Güld.); L. canadensis, Desm.; L. pardinus, Temm.; and L. rufus, Linn. F. caracal, Güld., and C. jubatus, Erxleb., are retained as before in the genera Caracal and Gueparda.

1871.-A. MILNE-EDWARDS, 'RECHERCHES DES MAMMIFÈRES.'

A long-haired variety of F. pardus, Linn., from China is named F. fontanieri.

1871.-D. G. Elliot, 'Proceedings of the Zoological Society of London,'

A paper upon the synonymy of two species of Felis, and F. euptilura described as new. Species 36.

1879 A MILER EDWARDS RECHERCHE DES MAMMIERRES!

F. cuntilura. Elliot, redescribed as F. macrotis, and two species described for the first time, viz. F. scripta and F. tristis. Species 38.

1872 .- Rembold Hensel, 'Königliche Akademie zu Berlin.'

F. geoffroyi, d'Orb., redescribed from Southern Brazil as new, under the name of F. guttula.

1873 .- J. E. GRAY, 'PROCEEDINGS OF THE ZOOLOGICAL SOCIETY OF LONDON.'

Felis caudata from Turkestan described as Chaus caudatus. Species 39.

1874 .- J. E. GRAY, 'ANNALS & MAGAZINE OF NATURAL HISTORY.'

A list of the specimens of Cats in the British Museum, similar to those previously published by this author, is here given. Four genera are employed not before mentioned in the other lists, viz. :- Elurina for F. planiceps, Vig. & Horsf.; Pyrofelis for F. temminckii, Vig. & Horsf.; Serval for F. serval, Exxl., and one other; and Puma for F. concolor, Linn. Sixty-two species are acknowledged, exclusive of C. jubatus, Erxl.; and the arrangement is very similar to that already adopted by this author. No new species are recorded.

1874 .- J. E. Grav, 'PROCEEDINGS OF THE ZOOLOGICAL SOCIETY OF LONDON.'

Felis badia described from Borneo. Species 40.

1839.—OGILBY, 'PROCEEDINGS OF THE ZOOLOGICAL SOCIETY OF LONDON.'

Felis serval, Erxl., redescribed as F. servalina.

1842 .- J. E. GRAY, 'ANNALS AND MAGAZINE OF NATURAL HISTORY,'

A light variety of F. pardalis, Linn., is called Leopardus griseus; and another, slightly different from the typical style, L. pictus. F. bengalensis, Desm., is renamed Leopardus ellioti, and a yellowish individual of the same species Leopardus horsfieldi.

1842.—Waterhouse, 'Proceedings of the Zoological Society of London.

Felis chrysothrix, Temm., is here renamed F. rutila.

1843.-J. E. Gray, 'List of Specimens of Mammalia in the Collection of the British Museum.

In this list are given the specimens of Felidæ contained in the national collection; and certain of them are described as new species, some of which our present knowledge of the subject shows us are not entitled to rank as distinct.

The various species are ranged under eight genera, viz.:—Leo, Tigris, Felis, Leopardus, Chaus, Caracal, Lyncus, and Gueparda. None of these, with the exception of Gueparda, which is synonymous with Cynailurus, Wagner, seem to be established on sufficient grounds to warrant their continuance; and accordingly they have not been adopted in the present work. The Lion is divided into three species, according to the locality from which the specimens came. The Tiger is called Tigris regalis. One species of Leopard is recognized as Leopardus varius. Under the same genus the following species are included:-uncia, onca, serval, concolor, yagouarondi, marmorata, pardalis. tigrina, viverrina, javanensis, and chaus. Several varieties of these species are named as distinct. F. temminckii, Vig. & Horsf., is called Leopardus moormensis; a variety of F. pardalis, Linn., is called Leopardus variegatus; another, L. tigrinoides. F. javanensis, Desm., from Sumatra is called L. sumatrana, and the same species from China L. chinensis. Another specimen is named L. reeresii. F. bengalensis, Desm., is called Leopardus elliotii. F. geoffroyi, d'Orbig., is named, but not described, as Leopardus himalayanus, habitat incorrectly given. Chaus is made to contain F. chaus, Gülden. (as C. lybicus), planiceps, Vig. & Horsf., ornata (as C. pulchellus), serval, Erxl. (as C. sercalina), and caffra, Desm. F. caracal, Gülden., is called Caracal melanotis; F. canadensis, Desm., and F. pardina, Temm., are placed in the genus Lyncus, and Cynailurus jubatus, Erxleb., in the genus Gueparda.

On the whole, the changes of nomenclature made in this catalogue cannot but be regarded as of little utility; and the errors displayed are those caused mainly by the author having had little or no knowledge of the types of species in foreign museums, and being only able to draw his conclusions from the specimens before him, which, of the majority of the species, were too few in number to show how very great was the variation in colour, markings, and even dimensions among the individuals comprising the species of Felidae.

1844.—Ball, 'Proceedings of the Zoological Society of London.'

A dark specimen of F. pardalis, Linn., called F. melanura.

1849,-D'ORBIGNY, 'VOYAGE DANS L'AMÉRIQUE MÉRIDIONALE.'

Leopardus himalayanus, Gray, described as F. geoffroyi, which name is adopted in this work, the habitat and description having been correctly given, and confusion of nomenclature thus prevented. Species 35.

1856 .- J. E. GRAY, 'PROCEEDINGS OF THE ZOOLOGICAL SOCIETY OF LONDON.'

F. marmorata, Martin, from Darjeeling, redescribed as F. charltoni.

1862.—R. SWINHOE, 'PROCEEDINGS OF THE ZOOLOGICAL SOCIETY OF LONDON

F. diardi. Desm., from China, renamed F. brachyura.

1863.—BLYTH, 'PROCEEDINGS OF THE ZOOLOGICAL SOCIETY OF LONDON.'

A list of species of Felis inhabiting the Indian region is here given. Twenty are recorded, and one described as new, F. jerdoni, which he afterwards decided, on examining the specimens in the British Museum at a time when I was present, to be only a dark form of F. rubiginosa, St.-Hil. F. japonicus, Gray, which is F. pardus, Linn., from China, is kept distinct. F. ornata, Gray, is referred to F. torquata, F. Cuv.; and the lynx of Thibet is kept distinct from F. lynx, Linn., as F. isabellina.

1877.—P. L. SCLATER, 'PROCEEDINGS OF THE ZOOLOGICAL SOCIETY OF LOXDON.' A light-coloured, dark-spotted, long-haired specimen of F. jubata, Erxl., described as Felia lanca.

CLASSIFICATION.

The Cat family is of very ancient lineage; and whilst no well-developed type of Felis has been discovered earlier than the Miocene period, yet feline remains have been procured in the Eocene deposits of both hemispheres, foreshadowing the existing creature of our own times. In the Miocene period and down to the Post-Pliocene, lived the great sabre-toothed cats of the genus Mackairodus, species of which, represented by more or less numerous fossil remains, rounced over portions of both the New and the Old World. To this group belonged the terrible M. smilodon of the western hemisphere, whose upper canines were so enormously developed as to meet the points of the small lower canines when the jaws were opened to their greatest extent. A nearly perfect skeleton of this great cat has been obtained, which would show that it was rather larger than the lion of the present day, but heavier and more powerfully formed. As the huge canines could not be used for biting, it is supposed they were employed as daggers, the animal striking with them when the mouth was closed. The Miocene period was very rich in cat-like forms and while the majority of them (judging from the fossil remains) were widely dissimilar to existing species, yet not a few showed close relationship with members of the Felidae of modern times. In the Pliocene and Pleistogene periods we find in the Old World the extinct lion-like F. spelaca, which probably differed but little in appearance from the living lion of our day. According to Dawkins and Sandford, this cat also inhabited the New World, as they consider the F. atrox of Leidy (Leidy, Trans. Am. Phil. Soc. 1853, vol. x. pp. 319, 323) to be the same species. During the same periods North America contained also some species as large as the existing lion, while the family was represented in South America by the sabre-toothed cats and other species, some of which were allied to living forms. It will therefore be seen that from early geological times cats or cat-like animals dwelt upon the earth, passing an existence of rapine and slaughter as do those of their relatives today, and fulfilling the object of their creation by keeping from undue expansion the abundant animal life that surrounded them.

The order Cannyona or flesh-eating animals is divided into two suborders, viz. Fissipedia and Primipolia—out those with toes separate from each other, and those with toes connected by a decible skin like a fin. In the former of those suborders, the Brispidia, in Section 1. Enroides, the great family of the Felden is embraced:

It is the chief one of the Carnivora; and its species are so highly endowed for their allotted duties in life that "no more complete examples of a perfectly organized living being can well be found than that supplied by a member of what has no inconsiderable claims to be regarded as the highest mammalian family, the Felidae (Mivart, 'The Cat,' p. 530). It comprises the greatest and most powerful of existing beasts of prey; its species are provided with all requisite means for capturing and destroying other creatures; and they fulfil a most important part in nature's economy. Their attributes are terrible, and many of them peculiar to themselves. The quick and farreaching vision, the sensitive and acute hearing, the stealthy movement, the noiseless footfall, the rapid onslaught and tremendous spring, accompanied, in the larger species, by the terror-dealing roar, the terrific blow of the armed paw, succeeded by the attack of the blade-like teeth worked by the scissor-acting jaw, form together the most fearful and paralyzing living engine of destructive power known among existing creatures. The skeleton of the cat is perfectly constructed to bear the sudden shocks and strains to which it is subjected, and also to respond to the active motions of the living animal. The bones are solid, and resemble ivory. The vertebral column in the lion consists of 7 cervical, 13 dorsal, 7 lumbar, 3 sacral, and 26 caudal vertebrae. The number of these last varies, however, in different examples. The clavicles are set in the muscles, but are not connected with either the sternum or scapula. The skull is of great strength and of comparatively small size, capable of being turned in every direction, and is firmly attached to the vertebral column by strong muscles. The lower jaw is incapable of any lateral motion, giving the teeth only a biting power. The facial portion of the skull is generally very short, furnishing one of the characters that distinguish the Cats among the Carnivora; and the wide sweep of the zygomatic arch affords ample room for a great masseter muscle, which moves the lower jaw and gives to it tremendous power. The Cats' teeth are peculiar, and are thirty in number, the formula being i. $\stackrel{i-3}{\text{col}}$ c. $\stackrel{i-1}{\text{col}}$ p. $\stackrel{i-1}{\text{col}}$ m. $\stackrel{i-1}{\text{col}} = 30$. The incisors are small, with a single fang, the two in the centre of the row being the smallest, the outer one at each end the largest. The crowns of these teeth are generally much worn, and exhibit merely a transverse furrow with an irregular prominence in front of it. The next tooth in the upper jaw is the canine, separated from the incisors by a diastema. This is usually a large and strong tooth with a single thick fang. The crown is curved and pointed, with a vertical groove on its outer surface, and one less marked on the inner. There is a well-developed ridge on the inner margin. A wide diastema separates the canine from the next tooth, the first premolar, which is very small, with a single fang and a conical crown. The next or second premolar is much larger, with a crown consisting of one triangular pointed cusp, with a small tubercle in front at base, and two behind-one in front of the other. This tooth has two fangs. The third premolar, called the sectorial, is the largest of all the teeth. The crown has three cusps, and one internal tubercle, the first cusp being the smallest and rather low and blunt; the second is the largest, somewhat of a triangular shape, pointed and directed backwards; the third is blunt and lower than the others. On the outer surface at the base of the cusps is a slight ridge. On the inner side a sharp ridge connects the largest and posterior cusps with a deep notch in the centre. The sectorial has three fangs-two in front placed transversely, and one, longer, behind. The last tooth in the upper jaw is the molar, which is very small, is set transversely, and has two fangs and a flattened crown. The lower jaw has also six incisors, smaller than those of the upper series, and next to them a canine shorter and more curved than the upper one, and which passes in front of the upper canine when the mouth is closed. Then comes a wide diastema separating the canine from the first premolar which is larger, but resembles the corresponding tooth in the upper jaw, and has two fangs and one large pointed triangular cusp, with a small one at the base in front and two behind. The second premolar is still larger, also with two fangs and a crown similar to the tooth preceding it. The molar or lower sectorial has unlike the upper one, only two fangs, the hind one being much the smaller. The crown consists of two sharply pointed diverging cusps, separated by a deep notch, with a minute tubercle at the base of the hind side of the posterior one. On the inner side the crown is deeply hollowed out between the cusps. These possess very sharp edges, which cut against those of the opposing cusps of the upper sectorial. All the molar series of the lower jaw play within those of the upper, and thus cut the food as would a pair of seissor-blades, instead of crushing or grinding it. The tongue of the species of this family is covered thickly by strong spiny papillae, which in the larger species are so strong as to be used effectively in detaching flesh from the bones, as though a file were the instrument employed. This peculiarity of the tongue can be easily perceived in a somewhat limited degree in the domestic cat; for that member, when drawn across the finger, feels rough like sand-paper. The paws are large and powerful, with five toes on the fore feet, of which the third and fourth are equal and longest, the fifth much shorter, and four toes on the hind feet with the third and fourth longest, and the second and fifth shorter and nearly equal. The claws which arm the paws are terrible weapons, tearing and lacerating whatever the animal seizes. They are retractile, and, when not employed, rest in a sheath which covers and protects them from injury. This is a most important provision; for as the Cat is digitigrade (walking upon its toes and not upon the

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sole of the foot, suprotected claws would be liable to become blanted and unserviceable.

In the large species was refrequently becken and split at their points, caused by their constant growth; and as they are softer beneath, they can be pulled away until they become sharp again. The points then frequently grow inconveniently long; and it is to free themselves from this amonyance that Cats are in the labit of seratching at the trunks and limbs of trees, or in the case of the domestic animal, at express and large of claims. In countries such as Patagonia, where trees are scarce, these animals seratch deep scores in the land soil to free themselves from lengthened claws.

The akin of all Cats hangs very loosely, and is capable of being drawn nearly halfway round the body,—a very wise provision of native; for if it were not so, in the various conflicts with each other the animals sharp claws would tear them, and otherwise inflict severe wounds; but as the skin yields, these weapons can get no hold, and are rendered comparatively harmless.

Forty-two species, including the Domestic Cat, have been recognized in this work as distinct; and I have seen nothing that has been advanced by any writer to cause me to alter any of the opinions expressed, or believe that more of the forms should be accorded sparates specific rank. There may be some specimens regarding whose causel position our present knowledge does not permit us to determine definitely; but of these, many examples from different localities, if the habitat is an extrastive one, mist be procured before it can be decided/whether the variations exhibited are or not such

GENERA

The species of Felidæ have been separated at various times by different authors into many genera, some of which included several species, others only one. Some of the distinctive characters of these genera, as given by their describers, are :-- a round or vertical pupil, with the orbit completely or incompletely closed behind by bone; the presence or absence of a first upper premolar; the separation of the nasals from the maxillæ by the lengthened processes of the intermaxillæ and frontal bones, as in Catolynx, Gray. This character is seen even more pronounced in the skull of lynxes, as well, though not to so great a degree in F. marmorata. One species has been by some accorded generic rank because the first upper premolar is double-rooted and greatly developed. With the exception of the Cheetah, or Hunting-Leopard, I have not adopted any of the genera proposed by later writers, but have retained all the forms in one genus, that of Felis; for it seemed that the characters, some of which have been enumerated above, were not of sufficient consequence to denote so important a division as that implied by the term generic. Some of the large Cats, such as the Lion, Ounce, Jaguar, Puma, Leopard, &c., may be considered as

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possessing round pupils in almost every condition in which the animal may be; yet, as the shape of the pupil in the majority of the species depends so much upon the quality and quantity of different lights and other causes, this character becomes one of the most unsatisfactory imaginable upon which to establish generic rank. The form of the skull also, even in animals closely allied-indeed, it may be said, of individuals belonging to the same speciesvaries so greatly that no reliance can be placed upon it for exhibiting generic distinction; and as regards the teeth, even these may not always be depended on, as Mivart states ('The Cat,' p. 393) that he examined a skull of an old lion which showed no trace of upper true molars or even of their alveoli; in fact there was no evidence of those teeth's past existence. The Cheetah, however, possesses several prominent and distinctive characters which may well be considered generic. Its claws are very imperfectly retractile, the skull is very high in proportion to its length, with short masals; the first upper premolar is sometimes present, sometimes not, while the second premolar is very large and projects downwards equally with the sectorial, and the inner cusp of the upper sectorial is rudimentary. The limbs and tail are also long, the former rather slender.

The following are the principal genera which have been proposed for these animals:-1766.—Felis, Linn. Syst. Nat. p. 60 1830.—Cynailurus, Wagner, Natür. Syst. Amphib. p. 30 Type F. jubata, Erxl. Type F. tigris, Linn. 1842.-Tigris, J. E. Gray, List of Spec. Mamm Brit. Mus. p. 40 1842.—Caracal, ,, .. ,, p. 46 Type F. caracal, Güld. Type F. jubata, Erxl. 1842.—Cynofelis, Less. Nouv. Tab. Règ. Anim. p. 49 . 1843.—Gueparda, J. E. Gray, List of Spec. Mam. Brit. Mus. Type F. jubata, Erxl. 1843.—Chaus, J. E. Grav, List of Spec. Mamm. Brit. Mus. p. 45 Type F. chaus, Güld. 1854.-Uncia, J. E. Gray, Ann. & Mag. Nat. Hist. vol. xiv. p. 394 Type F. uncia, Erxl. Type F. planiceps, Vig. & Horst 1855 .- Ailurina, Gerv. Hist. Nat. Mamm. vol. ii. p. 87 1858.—Panthera, Severtzov, Rev. et Mag. Zool. p. 385 Type F. concolor, Linn. 1867.—Leopardus, J. E. Gray, Proc. Zool. Soc. p. 263 Type F. pardus, Linn. Type F. geoffroyi, D'Orb. 1867.—Pardalina, Type F. bengalensis, Desm. 1867 .- Vicerriceps, Type F. marmorata, Martin. 1867 -Catolina. Type F. leo, Linn. 1867.—Leo, Type F. pardus, Linn. 1869.—Panthera, Fitzin. Sitzgs. Akad. Wiss. Wien, p. 457 Type F. viverrina, Benn. 1869 - Galeopardus, Fitzin, Sitzes, Akad, Wiss Wien, p. 644 Type F. planiceps, Vig. & Horsf. 1869.—Ailurogale, Type F. serval, Erxl. 1874.—Serval, J. E. Gray, Ann. & Mag. Nat. Hist. vol. xiv. p. 352 Type F. temminckii, Vig. & Horsf. 1874.—Pyrofelis, ,, р. 352 Type F. concolor, Lim. 1874 — Puma.

Besides these, many terms have been proposed as subgeneric for a large proportion of the species; but it does not seem necessary to notice them any further here, as they will be found in the synonymy at the head of the various articles in the body of the work.

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								1000	myry	PAMI	LV						
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								-									
		is pageros			-									Plate X	11.	3	
	11. Fel	is colocolo ens of this			mal are	much	to	be d	esired:	and i	t wo	uld b	e ver	interes	ting to I	earn I	
lore	specim	ens of this ion exhibi	pecu	nar anı	mai are	oromi	ale x	vas i	mainta	ined in	oth	ers,	or if	the for	m was	subjec	t
sual	colorat	ion exhibi	ted b	y the	unique	CAMIN	, and										
ation		is respect.												Plate X			
		lis jaguaro.	ndi .	-			100							Plate X			
*	13. Fe		1			100								Plate X	V.		
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ut	little is	known o	of the	habits	of this	Cat	; bu	t its	unus	mai dei	inami.	na.					
e C	at, p.	419) with	a fish-	-catchin	ng habit	like	that	possi	essed t	y F. t	averra	sees.		Plate X	WIII.		
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i re	gard to	F. wagar	i, con	sidered	by son	ne as	disti	nct,	Blyth	states	(Proc	. Zo	01. 50	c. 1000	, p. 101), till	r
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will	be fo	und nece	sary	to ser	arate n	early	ever	y sp	pecimen	ı, as,	like	the	Ocelo	ts, no	two wil	l be	10
tly	alike.		-														
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		lis catus	. 4		30										XXXI.		
		dis caffra		11 1				*	* *						XXXII.		
		die ornata															

33. Felis caudata

34. Felis shawiana

35. Felis cervaria

36 Felis canadensis

Plate XXXIII.

Plate XXXIV.

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Plate XXXVIII.

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38.	Felis	lynx			100			1		Plate XXXIX.
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12.	Cyna	ilurus jui	batus	1						Plate XLIII.

GEOGRAPHICAL DISTRIBUTION.

The Family Felidse is mainly Arctogrean, although it is well represented in the Notogrean portion of the eastern hemisphere; but of the species inhabiting Notogrea, nearly one half are also natives of Arctogrea; so that really, out of the entire number of species acknowledged as such in this work, only six are not found anywhere within the limits of Arctogrea. These are F. pageros, F. colocolo, F. jaguarondi, F. eyra, F. tigrina, and F. geoffroyi. The Cats are distributed over a large portion of the earth's surface, and are found in five of the zoogeographical regions, the Australian being the only one in which the family is not represented. The Palearctic and Oriental Regions contain the greatest number of species, the former having only about five more than the latter. Many, however, inhabit both regions, the Palæarctic having twelve species peculiar to itself, the Oriental but eight. The Palearctic Region, with which I commence my review, contains twenty species of this family; and of these F. catus is found in the British Islands and in Western Europe where extensive forests abound. It has also been obtained by Dr. Scully in Yárkand, Eastern Turkestan, of the Siberian subregion. F. cerearia is met with in Scandinavia (where, however, it is rather rare), in the Caucasus, and northwards along the forests of the Ural Mountains in the Siberian subregion; it is also a native of Persia, in the Mediterranean subregion. F. canadensis is found generally in the northern part of this region, extending southwards along the Ural chain of mountains. F. lynx has a wide dispersion, as it inhabits Scandinavia, the wild portions of Germany, Poland, and Hungary, is rather rare in Switzerland and France, is also met with in Italy and Asia Minor of the Mediterranean subregion, and is numerous in Russia, the Caucasus, and the Thibetan plateau of the Siberian subregion. F. pardina is restricted to the Mediterranean subregion, and is found in Portugal, Spain, Sicily, Sardinia, and Asia Minor, where it is rare. In this subregion F. leo and F. sereal are met with in the vicinity of Algiers, the former also in Asia Minor and Persia. F. chaus is found in Persia, and F. jubata in Arabia, Syria, and Mesopotamia, and also in the western part of Turkestan, of the Siberian subregion. F. pardus is a native of Northern Africa within the limits of the Mediterranean subregion, and of Persia; it is also found generally in China in the Manchurian subregion. F. tigris is met with in Georgia, Turkestan, the Altai range, and eastwards to the Amoor; it is also generally distributed throughout the Manchurian subregion, and in Persia of the Mediterranean subregion. F. uncia has a wide dispersion, its range extending over all the snowy regions of Central Asia, Turkestan, the Thibetan plateau, the valley of the Amoor, and eastward to the island of Sakhalien and to Corea, in the Manchurian subregion. It is also a native of Asia Minor east of Smyrna, in the Mediterranean subregion, and is found on the Himalayas as high as 18,000 feet, and descends on the southern slopes of these mighty mountains to the grassy regions between the limits of the forest and the snow. F. diardi is met with in Thibet; and F. caracal also in Thibet, as well as in Asia Minor and Persia of the Mediterranean subregion. F. caudata and R. shancian are natives of Turkestan, the first from Bokhara, the second from Yarkand; while F. manul ranges from Siberia, Thibet, and Mongolia to the Himalayas. The three last-mentioned species are restricted to the Siberian subregion. F. tristis and F. scripta have been obtained in the province of Setchuan, and F. emptilura from near Pekin, in the Manchurian subregion, and also in the vicinity of Canton in the Oriental Region. The Oriental Region (which comes next) is nearly as rich in the number of its species of Felidæ as is the Palæarctic, and contains eight not found in that region. F. tigris is met with from the Himalayas at a height of 8000 feet, throughout India, to Cape Comorin; it is also common in Burma, and is found in the Malay peninsula and the islands of Sumatra, Java, and Bali of

the Indo-Malayan subregion. F. loo still maintains its existence in the peninsula of Guzerat; F. pardus is also distributed throughout India, common in Burma and the island of Hainan of the Indo-Chinese subregion, and is met with in the Malay penisula, Sunatra and Java of the Indo-Malayan subregion. F. diardi ranges at an elevation of from 5000 to 10,000 feet on the Himalayas into Nepaul and Sikhim, and the islands of Hainan and Formosa of the Indo-Chinese subregion, and the Malay peninsula, Sumatra, and Borneo. F. hengalencis is found throughout India, and in Ceylon of the Ceylonese subregion; it is also met with in Assam and Burma, and in the Malay peninsula, Sumatra, and Java. F. siverrina ranges over India and Ceylon, is also met with in the island of Formosa and in Southern China of the Indo-Chinese subregion, and has been obtained in Burma, Tenasserim, Camboja, and the Malay peninsula of the Indo-Malayan subregion. F. ornata is confined to the desert regions of North-west India: and F. caracal is met with throughout Northern and Central India, while F. chaus is found from a height of 8000 feet on the Himalayas to Cape Comorin. It is also a native of Burma and Arakan of the Indo-Chinese subregion. C. jubatus inhabits the western and southern part of India, and is also said to be a native of Ceylon (Baker, Wanderings in Ceylon, p. 118). In the Indo-Malayan subregion, Borneo possesses F. marmorata, F. planiceps, and F. badia; Sumatra likewise contains the two first named; and F. planiceps also is found in the Malay peninsula. F. temminckii is a native of Nepaul and the South-eastern Himalayas, probably also of Burma, and dwells in the Malay peninsula, Sumatra, and possibly Borneo. The last species to be mentioned in this region is F. jarensis, with a wide distribution, having been obtained in the vicinity of Canton in the Indo-Chinese subregion, and in the Malay peninsula, Sumatra, and Borneo.

The third region, the Ethiopian, contains only two species not already mentioned in the regions reviewed. viz. F. chrysothrix and F. caffra. The first inhabits Western Africa from Sierra Leone to the river Gambia; but how far it may extend into the interior is unknown. F. caffra, together with other species of this region, viz. F. pardus, F. serval, F. chaus, F. caracal, and C. jubatus, inhabit Africa generally, from Algiers to the Cape of Good Hope. F. leo also had the same dispersion; but of late years it has been driven away from the southern portion of the continent into the interior.

Passing now to the western hemisphere, the Nearetic Region claims our attention; and we find that F. concolor is generally distributed throughout the whole region from 45° north latitude, and extends its range along the entire length of the Neotropical Region to the Straits of Magellan. F. canadensis is distributed over the entire northern portions of this region, and southwards on its eastern side to Pennsylvania; while F. rufa is met with generally over the region to Mexico of the Neotropical Region. F. pardalis is a native of Arkansas, Texas, and Mexico, and generally through the Neotropical Region west of the Andes to Buenos Ayres. F. onca, the most powerful member of the Felidee on the western hemisphere, ranges from Texas south to Patagonia in the Neotropical Region.

The last-named division, besides the species already given, contains F. jaguarondi and F. tigrina, which has been procured from Mexico, through Central America and the eastern part of South America, to Paraguay. F. eyra is found from Central America to Paraguay. F. colocolo seems to be restricted to Guiana; F. pageros ranges from Buenos Ayres to the Straits of Magellan; and F. geoffroyi is met with in Buenos Ayres and Patagonia.

It will be seen from the foregoing review that the Palæarctic and Oriental Regions possess much the larger number of the known species of the Felidæ, and may be considered the home of the Family of modern times.

The recent discoveries in America of extinct feline forms may, however, raise a reasonable doubt in our minds whether, in the earlier epochs of the earth's history, the New World, so called, did not equal, if not, indeed, surpass the eastern hemisphere in the variety and number of its species of Cat-like animals. It is difficult, if not impossible, with our present knowledge to state which hemisphere first produced a feline form of quadruped; for, of the earliest known genera of these creatures, viz. Pseudalurus (Gervais, Paléont. Franç. p. 232), Eusmitus (Gervais, Zool. Paléont. Général. 1876, pp. 53, 54, pl. 12), and Dinictis (Leidy, Journ. Acad. Nat. Scien. Philad. vol. vii. p. 64, pl. 5), each appearing in the Eocene period, while all are represented in the Old-world strata, the third, or one nearly inseparable from it, is also found in those of North America. These animals were of course very different from the existing species of the Felidæ; but the specialized forms of that early age, ever progressing through the long intervening epochs towards a higher type by successive changes and unnumbered modifications, have resulted at length in the highly organized, wonderfully endowed Cat of our own time.



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3.	Felis	tigris .								Plate III.
4.	Felis	uncia .			.5					Plate IV.
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		lynx .	-				-	10	-	Plate XXXIX
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			0							Plate XLII.
		i aomestica tilurus jubatus					*			Plate XLIII.

FELIS LEO.

THE LION.

FELIS LEO, Linn, Syst. Nat. (1766) vol. i. p. 60, sp. 1,-Erxl, Syst. Reg. Anim. (1777) p. 500, sp. 1,-Schreb. Säugeth. Th. iii. (1778) p. 376. LEQ, Lea. Spr. Not. (1989) vol. 1 p 60, sp. 1.—26.1 syst. log. Abst. (1777) B 60, sp. 1.—28.4 see, 100 cp. 1.—28.4 App. p. 371.—Blainv, Ostéol. (1839-64) vol. ii. Atl. pls. i., v., vi., xi., xiv.—Keyserl. & Blas. Wirbelth. Eur. (1840) p. 60.—Harris, Game & Wild Anim. S. Africa, (1840) pl. xxi.—Less. Nouv. Tab. Règn. Anim. (1842) p. 49. sp. 511.—Gray, Cat. Mamm. Brit. Mus. (1843) p. 39.—Jard. Nat. Libr. vol. xxi. pls. 1, 2, 3.—Hutton, Journ. Asiat. Soc. Beng. (1845) p. 340. sp. 3.—Laeép. Ménag. Mus. Hist.

THE LION, Penn. Hist. Quad. (1793) p. 274.

LE LION DE BARBARIE, F. Cuv. & St.-Hil. Hist, Nat. Mamm. (1819) pls. 114, 115, 116,—Temm. Mon. Mamm. (1817) vol. i. p. 84, var. a. LE LION DE SENEGAL, F. Cav. Hist. Nat. Mamm. (1819) pl. 117.—Desm. Mamm. (1820) p. 218, var. a.—Temm. Mon. Mamm. (1827) vol. i. p. 85. var. b.

LION D'ARABIE, Desm. Mamm. (1820) p. 218. var. β.

LE LION DE PERSE, Temm. Mon. Mamm. (1827) vol. i. p. 86. var. c.

FELIS BARBARUS, var. a, Fisch. Syn. Mamm. (1829) p. 197.—Less. Nouv. Tab. Règn. Anim. (1842) p. 49. var. A.

FELIS SENEGALENSIS, Fisch. Syn. Mamm. (1829) p. 197. var. \$\beta.-Less, Nouv. Tab. Règn. Anim. (1842) p. 49. var. B

FELIS PERSICUS, Fisch. Syn. Mamm. (1829) p. 197, var. y.-Less. Nouv. Tab. Règn. Anim. (1842) p. 49. var. D.

FELIS HYBRIDUS, Fisch. Syn. Mamm. (1829) p. 197. var. 8.—Less. Nouv. Tab. Règn. Anim. (1842) p. 49. var. G. FELIS LEO GOOJRATENSIS, Smee, Trans. Zool. Soc. (1833) vol. i. pl. 24. p. 165.

LEO GAMBIANUS, Gray, Cat. Mamm. Brit. Mus. (1842) p. 40.

FELIS GOOGRATTENSIS, Gray, Cat. Mamm. Brit. Mus. (1842) p. 40.

LE LION, Tchihatcheff, Asie Min. (1856) p. 603.

TIGRIS LEO, Severtz. Rev. Mag. Zool. (1858) p. 388.

LEO NOBILIS, Gray, Proc. Zool. Soc. (1867) p. 263.—Id. Cat. Cara. Mamm. (1869) p. 9.

LEO BARBARUS, Fitzin. Sitzgsber. Akad. Wiss. Wien, lviii. (1868) p. 432.

LEO CAPENSIS, id. ibid. p. 436.

LEO SENEGALENSIS, id. ibid. p. 438.

LEO GUZERATENSIS, id. ibid. p. 443.

HAB. South Asia and Africa, and formerly (within historic times) the south-east of Europe. Within the present century distributed over much of Central, West, and North-west India, but now confined in that country to the peninsula of Guzerat, unless a last remnant still maintains a lingering existence in the jungles bordering the Sind river in Bundelkund-which I now consider doubtful. Eastward of the north-west provinces of the Bengal Presidency the Lion has not been observed in any part of Asia (BLYTH).

As far back as the Miocene period, earlier than which no species of true Felis has yet been discovered, the Lion, as he is now known to us, was a dweller on the earth; for although it is still disputed by some, yet it is most probable that the prehistoric Felis spelaca was the same as the Lion of the present day. Felis spelaca resembled the existing Lion in having the nasal processes of the maxillary bones extending as far back as the fronto-nasal articulation; and these were pointed, whereas those of the Tiger are truncated and do not reach the end of the nasals. As this character in the existing Lion and Tiger is constant and reliable, it would seem to show that the extinct animal cannot be referred to

the Tiger, and, if not identical with the Lion of our time, was at least very intimately allied, differing chiefly in its larger size, although the remains of certain specimens indicate an animal somewhat smaller than some of the large Lions of the present day. Individuals undoubtedly varied in size, as do those of the existing species. All the remains of F. spelsen have been found in the so-called bone-cares scattered throughout Western Europe, and all are regarded as belonging to the same period, viz. the Pleistocene or later Pliocene. In England the Care Lion, as it is called. has been found in Yorkshire, where a few teeth were obtained in the cave of Kirby Moorside. This is apparently its most northern range in this direction. In the eastern counties it was very scarce, though numerous bones have been obtained from the river-deposits of the Thames valley. The greatest quantity of remains has been procured in the Mendip Hills in Somerset; and in a place called Wookey-hole hyaena-den a number of bones were found, all much gnawed, which would indicate that the animals had fallen a prey to the Hyana of those times. On the continent the remains of this great Cat have been met with in different parts of Belgium, France, Germany, Russia, Italy, Greece, and Sicily. It does not appear to have inhabited Asia, but was replaced there by an extinct species of Tiger (F. cristata), remains of which were discovered in the Miocene formation of the Sivalik Hills. The food of this powerful creature was the ox. reindeer, bison, &c. The Cave-Lion disappeared from Britain towards the close of the Postglacial period, and is considered to have retreated gradually from Europe and become extinct between 340 s.c. and a.b. 100. The cause of this disappearance, according to Dawkins, was the warfare carried on against it by the people of those periods, as exhibited by the leonine remains found in the ancient dwelling-places of the Postglacial men in Aurignae and La Madeleine. This is probably a correct supposition; for neither was the temperature unsuited for its continued existence nor had the supply of food failed.

From the eagliest historic times the Lion has been selected to symbolize power and majesty; and mearly all writers have united in bestowing upon him the royal title of King of Beats. This appellation was given probably more on account of his appearance that from any especial nobility of character which he might possess; for in strength he is surpassed by the Elephant and Rhinocross, his fellow innates of the forests and jungles, and equalled by the Tiggs while his disposition, like that of all Cats, is craftly and treacherous, and lithe in keeping with his frequently majestic aspect. Among the earlier nations of the earth the Lion was reserved as royal game, and none but the sovereign could hunt him. The scalptured slabs of Nineerh bear witness to this fact, and by their graphic pictures prove what importance was attached to the pursuit of this animal; and these pictorial representations are probably the earliest extant of whis fee bears.

Individual Lions are subject to much variation in the colour of their pelage; and from this cause many have been described as distinct by successive writers; but I see no reason whatever for believing that there is more than one species. As they vary in the hues of their bodies, so do they also in the colour and extent of their manes. But these are only individual peculiarities, the same as are observed in man; and as full beards and no beards are to be met with daily, so it is equally common to see Lions with enormous manes extending even behind the shoulders, others with this appendage much more moderate, and some with none at all. Also the manes are seen of a jet-black, tawny, or yellow colour, irrespective of the locality from which their possessors came. The Babylonian animal, as well as the black-maned one from Natal, present the grandest appearance, with the mane covering the entire neck and shoulders, and extending also beneath the body as well as upon the flanks. The colour of the body is of all hues in different individuals, ranging from a deep reddish brown to a silvery grey, the latter so pale that, as stated by Selater, a rumour was once current at the Cape of Good Hope that there existed in the far interior a race of white Lions. The dark-coloured specimens are perhaps the rarest of all. The mane attains its greatest luxuriance when the physical powers have received their fullest development, though in some instances doubtless it continues to increase after the animal has arrived at maturity, Major Smee described (l. c.) the Lion from Guzerat as a distinct species, on account of a specimen he obtained there having very little mane, which led him to suppose that all Lions from that locality were maneless. But this has been ascertained to be incorrect; for not only have individuals been received direct from the Euphrates possessed of as full flowing manes as any of their African brethren, but maneless Lions have also been obtained in Africa; for, as stated by Messrs. Oswell and Wilson, in their book on Lake Ngami, two specimens were killed by them at the lake which were quite destitute of this ornament. It may be, as suggested by Blyth, that the absence of mane observed in certain Lions is caused by its being torn off in the prickly jungles through which the animal forces its way.

FELIS LEO.

The appearance of the king of beasts in his native wilds, according to Livingstone, is not very imposing, only a creature larger than the biggest dog ever seen, and with a visage partaking strongly of the canine features. When encountered by day, the Lion stands for a moment gazing, then turns and walks slowly away, looking over his shoulder, then commences to trot, and when he thinks himself out of sight, bounds off at a gallop. In regard to its nobility of character, Livingstone states that nothing he ever learned in regard to the Lion gave him reason to believe that in this respect it was altogether worthy of its reputation; but as to its great strength there could be no doubt, although it seemed to be inferior in power to the Tiger. Occasionally they will spring onto the hindquarters of a horse, but cannot mount upon those of an cland, their efforts being directed to tearing down the latter animal with their claws. Messrs. Oswell and Vardon once saw three lions endeavour to drag down a buffalo; and although he was mortally wounded by a two-ounce ball, it was a considerable time before they succeeded. The flanks are usually selected by the Lion when attacking his prey; and with these he commences his feast, although he is also very fond of the entrails and fatty portions, these parts in an cland being a full meal for the largest lion. In India its prey is chiefly bullocks and donkeys; and its fat is highly prized by the natives as a cure for rheumatism. As a general rule, the Lion when attacked will endeavour to make his escape, either by fairly taking to his heels and trying to outstrip his pursuers, or else by hiding in the thickest depths of the jungle. But if wounded or surrounded so as to make escape impossible, he will fight to the last, and, roaring fearfully, will with great bounds endeavour to come to close quarters with his assailants. At such times a steady hand and eye are needed, and woe to the luckless hunter whose gun misses fire or whose nerves fail him at the trying moment; for a hand-to-hand conflict is a very unequal one between man and this great Cat, the former rarely escaping with his life.

During the breeding-season this species is very fearless and ready to brave any danger; and if a man happens even to cross to windward of a lion and lioness, they will rush at him, says Livingstone, in the manner of a bitch with whelps. When old, Lions frequently become mangy and lean and, by reason of their teeth decaying, perish miserably, and if they are at a distance from villages will catch mice and such small rodents, or if near huts will seize goats, or a woman or child, if one happens to go out at night. Finding that these last are especially easy to master, they continue to prey upon human beings, and soon become confirmed "man-eaters." Many are the tales that have been told by travellers of Lions that have become addicted to this horrible practice, and of their boldness in springing into the camp at night and seizing some unfortunate person sitting perhaps around the fire in the midst of his companions, and rushing away into the darkness with their prey. These are not always aged animals; for some have been killed that were in the prime of life, and probably were thus unusually bold from their fondness for human flesh. Rarely has a person escaped with life when thus seized by a Lion, a bite from the fearful jaws of the beast being sufficient to crush at once the largest bone in a man. The Lion is generally found alone or else only accompanied by his family, the difficulty of obtaining food in sufficient quantity for the subsistence of such large creatures being probably the chief cause why they do not go in troops. Sometimes, however, several are met with together; and many a traveller's camp has been kept on the alert all night by the roaring of the hungry creatures, seeking some available opening through which they might spring upon and escape with their booty. Major Smee killed no less than eleven Lions in Guzerat in about a month. They were called by the natives "Outiah Bang," or Camel Tiger, from a fancied resemblance of their colour to that of a camel. They were very destructive to domestic cattle and donkeys; but he did not learn that they had ever attacked men.

In size the Liou varies from ten to eleven feet in extreme length. Formerly those from Africa were deemed distinct from the Asiatic ones; but this belief is now generally abandoned, as differently coloured individuals age, "fisted in both places, and the size and colour of the mange has no specific value. The Dutch colonists of South Africa designate those with black manes as the "Zwant," and those with yellow as the "Vant," and contend that one is less ferocious than the other. The Lion is explade of epiduring circume cold as well as best; and M. Tebliatschef mentions that traces of these animals were seen in the regions of eternal snow at Mount Zendakou, in Persia, by M. Amini Eloy, and that his guides, who were left below at a height of about L740 unters, were frightened by the appearance of several of these animals. M. Gérnal states that Lious inhabit the most elevated mountains in Algeria, and although they descend a little in writter, yet sill their habitat is covered with show for several mountains at a time; and when the

maints leave their boty labitations, it is more for the region that the snow interferes with their movements than on account of the cools. According to the grade-gay just manofi this animal supports cools before than great heat.

The Lion, even in its wild state, seems at times to become coved by the human eye; and Thompson relates, in his 'Adventures in South Africa, that a Borr of the Craikest district, when hunding with a neighbour, approached a fountain surrounded, as is usual, by reeds, when suddenly a hon started up by the side and seized him by the left arm. The man stood perfectly still, aware that if he struggled he would be certain to suffer instant destruction. The tion also remained motionless, holding the arm fast in his teeth but not biting it severely, and shutting his eyes as if he could not look upon the face of his victim. As they stood thus, the man's presence of mind slid not forsake him; and he beckened to his companion to shoot the him in the head, which could easily have been done. But his coincide was a great coward, and, in place of helping his friend, he retreated to the top of a rock near by The Boer carnestly begged for assistance, the lion remaining perfectly quiet; and if the man had been patient a little longer, it is possible the animal would have left him. But, indignant at the cowardice of his companion, he drew his knife, and, with all the force of his right arm, drove it into the animal's breast. The thrust was a deadly one; but the enraged beast, although held at arm's length by the man in his desperate efforts to defend himself, so lacerated his unfortunate victim's arms and breast with his claws, that the bones were laid bare, and at length both fell from loss of blood. The cowardly neighbour, who had witnessed the fearful struggle without attempting a rescue, at length mustered sufficient courage to go to his mangled friend and carry him to the nearest house, where every assistance was rendered, but in vain; for the poor fellow expired on the third day from lockjaw.

I have mentioged that occasionally Lions become "man-cates," as the term is. Of all creatures, unarmed man is the most inequable of successful defence in a striggle, with the inhabitant of the desert and the forest; and the will beasts some learn how easy it so make link their prey. When a Lion has become a confirmed "man-easter" lis is extremely dangerous; for it is frequently his habit to lie in with side day here a village, watching for an opportunity to spring upon some unfortunite person who goes beyond the limits of the houses, and carry him off to the jumple. Instances are known of a village being almost depopulated by one of these ferceious beasts, so many human beings having been alsin, and the survivous completed to remove to another beadity.

The Lion is now no longer found in Dirope. It is still not with in various parts of India, according to Jerdon, from Catch to Hurriana, in Gwalior and Saugher in the north-west, but only in Guzent, and Catch is at all common flee sague author also states that quite recently the Lion has been kilded as fire-stawed as the Allighabal and Jubhulpore road. In Guzent the species is found along the banks of the Saubtemuttee, near Ahngalabad. It extends through a range of country, according to Captain Snees, of about forty miles length. It is also found on the Rhum, near Rhumpor, and also near Partner. North or east of Bengel the Lion is not now mitt with. It is not uncommon in Persia, nor in shaw Mijor. In affice, at it still from in the Altas ringe of mountains, but has been nearly, if not quite, extirpated from Egypt, and line also been driven into the interior from the Cape of Good lings. In other parts of Africe, nowever, it is very common. At one time II grobbly readed over the entire continent.

My Plate contains figures of all the known varieties of the Lion, viz. the Black- and Yellow-maned, the Babylonian (with the mane covering the shoulders), and the maneless style. A Lioness is drinking in the foreground.

The shall of the Lion resembles that of the Tiger in many particulars; but the following characters will serve to intringuish them. The nasal processes of the maxiliaris are pointed and prolouged to the same line as is reached by the fronto-meal articulation. The meal aperture is inclined towards a square shape. The frontal ends of the maxiliaris are pointed towards a square shape. The frontal ends of the maxiliarism of the frontal content of the frontal is short, which consequently brings forward the particul sture, and places correspondingly backwards the postbodial process, giving the skull, when viewed from above, the appearance of being "short-waisted," in contrabilisation to the "long-waisted" aspect of the Tiger's skull, Mr. By Dul Dukving year a character to distinguish the Lion from the Tiger, which he considers of specific value and consequently eliable. On the inferior border of the minibilator rames, immediately beneath the last mode, there is developed a slight process, onge or less pronounced in different individuals, causing the under jaw in profile to have in some a rounded, outline from symplysis to angle, while in other life study of the Tiger's skull, where



FELIS CONCOLOR.

COUGAR. PUMA. PANTHER. AMERICAN LION.

FELIS CONCOLOR, Lim. Mantion, (1711) p. 482.—Brd. Spd. Reg. Axion. (1717) p. 311. qp. 17.—Schech. Singelic. (1719) Th. 10. p. 282.
pl. 8 (ap. 4.0 min. Spd. Xai. (1719) yi. k. pl. 11, p. 7 v. qp. 8.—Tools. Zoope, (1914) p. 282. pp. 4.—Doom. Mann. (1992) p. 118. son. 383.
pl. 8 (ap. 4.1 k. 2.—Hort From. Januare (1982) p. 128. p. 4.—Tools. Mann. (1992) p. 118. son. 383.
pl. 8 (ap. 4.1 k. 2.—Hort From. Januare (1982) p. 128. p. 4.—Tools. Mon. Mann. (1912) p. 119. p. 4. p. 124. p. 4. p.

FELIS NIGRA, Eral. Syst. Rign. Asim. (1777) p. 512. sp. 8.

FELIS DISCOLOR, Schreb. Singeth. (1778) p. 284.—Gund. Syst. Nat. (1788) vol. i. pt. 1, p. 78. sp. 12.—Fisch. Zeogn. (1814) p. 223. sp. 6... Less. Max. Manus. (1877) p. 188. sp. 509.

PUMA, Penn. Hist. Quad. (1793) p. 289, sp. 189.

FELIS PUMA, Molina, Sagg. Stor. Nat. Chili, (1810) p. 245. sp. 8.—Shaw, Gox. Zool. (1830) vol. i. p. 258. pl. 120.

BLACK PUMA, Jard. Nat. Libr. vol. xvi. p. 185. pl. 5.

FELIS UNICOLOR, Less. Man. Mamm. (1827) p. 190. sp. 500.

LEOPARDUS CONCOLOR, J. E. Grey, Cat. Massa. Reit. Mas. (1842) p. 41.—Mouve, Proc. Zeof. Soc. (1849) p. 51.—J. E. Grey, Proc. Zeof. Soc. (1847) p. 265.—Id. Cat. Cara. Massa. (1869) p. 12.

PANTHERA (PUMA) CONCOLOR, Severtz. Rev. et Mag. Zool. (1858) p. 285.

PANTHERA CONCOLOR, Fizzing, Strangels, Akad, Wiss, Wies, (1869) lia. p. 429.

PANTHERA CONCOLOR NIGRA, id. 864. p. 484.

PANTHERA (PUMA) CONCOLOR, id. ibid. p. 686.

HAB. Found generally over all North and South America from 45' N. to the Straits of Magellan.

THE Cougar, Puma, Panther, or American Lion, by each and all of which names this species is known in America, is shy and retiring in its habits, and frequents the wildest portions of the country, hiding in swamps or in the fastnesses of the mountain-ranges. In the western and southern parts it is sometimes seen upon the open prairie, although generally it keeps to the woods and thick coverts. It will at times attack cattle; but its chief means of subsistence are small animals, such as young deer, raccoons, turkeys, &c.; and it is said that when pressed by hunger the Puma will even out carrion. Although it will fight hard when obliged to defend itself, and is espable of inflicting severe and dangerous wounds with its teeth and claws, yet the Cougar will always flee from man's presence; and even the barking of a small dog will be frequently sufficient to cause it to take refuge in a tree. It is distributed sparsely over all North and South America, having been found from north latitude 45' to the Straits of Magellan. Sometimes it will remain in the vicinity of a dead animal, which it has either killed or perchance found, until it has entirely consumed it, retiring after a full meal to some place of concealment, and returning again when called forth by hunger. Although sometimes met with by day, the Cougar is a nocturnal animal, being able to see well by night; and its velvet feet enable it to steal noiselessly upon its unsuspecting prey. It climbs trees with great facility, and usually returns to the ground by a single spring, and at once bounds away, if pursued, at a full canter. Accounts are not wanting of the Puma having attacked men unprovoked; but these attacks are rare, and generally caused by the animal having been long without food. The following is related by Audubon and Bachman :- "Two raftsmen on the Yamo river one night encamped on the bank under a small tent they carried with them, just large enough to cover two. They had a merry supper, and, having made a large

FELIS CONCOLOR.

for, retired, "turned in," and were soon fast saleep. The night waned, and by degrees a drizzling rain, succeeded by a heavy shower pattering on the leaves and on their cauves roof, which sheltered them from its fury, half awakened one forely shower pattering on the sacres are an under care to be a congress one, and in an instant the animal pounced upon the Next and overthrew it. Our raftsmen did not feel the full force of the blow, as the slight poles of the tent gave way, and the impetus of the spring carried the Panther over them; they started up and scuffled out of the tent without tacher notes 'to quit,' and by the dim light of their fire, which the rain had nearly extinguished, saw the animal tuning them set work for mother loop; they hastly seized two of the burning sticks, and whirling them around their bask with load where, seared sway the midnight prouder. After this adventure they did not, however, try to sleep

In Designary, assembling to Ansee, the Poma, being so much less ferocious than the Jaguar, has been almost extirpated under their tent any more that night." by the inhabituate. It rarely attacks cows or horses, but confines itself to colts, calves, sheep, and smaller quadrupeds a and as disposition is an ersel that, if it has an opportunity, it will kill many more animals than it can possibly est, merely for the satisfaction of sacking their blood. The female brings forth two or three young at a time; and the period of gostelion is about 96 or 97 days. In captivity the Conger has frequently exhibited a very gentle disposition; and one that was presented to Ansra became as tame as a dog. It was claimed to keep it from the poultry, but played with every one, and on an orange being given to it, the creature threw it about and caught it with its fore paws in the same manner as a cat. He never saw it become irritated; and it seemed not to distinguish between persons. When rubbed or tickled it by down and purred like a cat. It used to hide the superfluous food given to it with sand, as it had no strew, and, before esting placed the fiesh in the drinking ressel and washed it. Wilson also had one of these animals, which appeared to be as gentle as the one possessed by Azara. It was very fond of bathing, and frequently jumped in and out of a large tub, evincing great satisfaction. It escaped once in London during the night, but permitted itself to be taken by a watchman without making any resistance. On its way to England it was intimate with some dors and monkeys that were on board the ship, but never offered to injure them, although the monkeys frequently insulted

is in many ways; but if a goat or fowl came within reach it was immediately killed. In 1832 a Puma brought forth two young in the menagerie of the London Zoological Society. The mother was very gentle, and permitted the keeper to enter her cage and handle the cubs. They were pale fawn-colour and spotted with blackish brown, as shown in the Plate. The mother used to carry them about in her mouth from place to place; and before littering she broke all the straw in her den into pieces and made a nest. In the early settlements of America the Cougar was called a lion, and the skins brought in by the hunters were supposed to be those of females; and it was said that the males were too active and fierce to be taken.

The Puma generally makes its lair in some hole or cave in the rocks, near to the entrance, withdrawn only so far as to receive protection from the weather. Where there are no rocks, as in portions of southern North America, it makes a bed of sticks, mosses, &c. in a dense case-break (sufficiently thick to protect the animal by its overhanging leaves). At times the Congar utters a peculiarly shrill cry or shrick; and I once heard this in the dead of night, when encamped on the St. John's river in Florida. The animal seemed to be directly over my tent; and the uncarthly yell made my flesh creep, and brought me out to the fire, that was burning brightly before the tent, in a moment. I could see nothing, however, in the darkness; all was still; and after waiting a short time, in hopes of getting a shot at the intruder, I returned to the tent. The Puma expresses satisfaction and pleasure by purring like the tame cat; but when angered, usually atters a low growl. Although the adult is generally devoid of all spots or markings, the young are, on the contrary, much spotted, especially on the legs and loins, these spots gradually disappearing as they get older. Notwithstanding the great extent of country over which this species roams, there do not appear to be any indications whatever of there being more than one species. Some are lighter in the colour of their coats than others; and I have noticed that the length of tail varies considerably; but this is also to be seen in many species of this family, and has no specific importance. The cubs are nursed by the mother until half grown, when they begin to hunt a little for themselves; they do not. however, leave the dam until she is again with young, when she probably drives them away, or they seek mates for themselves. This species is about five feet in length from the nose to the end of the tail, this last being three feet in length. The female is slightly smaller than the male.

Summer pelage-general colour reddish brown, slightly darker on the tail. Line above the eyes, upper lip in front,

FELIS CONCOLOR.

checks, throat and breast beneath pure white. A broad black mark on each side of the upper lip. Tail frequently tipped with black. Nose to root of tail 3 feet 9 inches; tail 2 feet 4 inches.

Winter pelage is a dark grey or mouse-colour, with certain parts of the body white, as mentioned above. Young are bright buff, spotted all over with dark brown or brownish black; the tail also ringed and tipped with

brown. These spots become reduced in size as the minual gets older, and at length they disappear altogether. The skull of the Puma is very deep anteriorly, and in its profile view is greatly arched above, and in some specimens possesses a well-developed crest. The face is short, and nearly on a level with the forehead, with rather narrow nasals, which extend to a point at their fronto-nasal articulation, and are deeply depressed in their centre, forming a groove along the symphysis. Infraorbital foramen oblong. Brain-case short, regularly arched, or rounding evenly outward, with the parietal suture well back, giving a rather "long-waisted" appearance to the skull when viewed from above. Infraorbital space rather narrow. Mandibular ramus straight for three fourths its length from the symphysis, then curving slightly downward to the angle. Malar bone broad, and, with the zygoma, forming an oblong curve. Canines stout, rather broad at their crown, but not of any considerable length. Molar series well developed. The on hyoides, as stated by Mivart (The Cat, p. 397), is connected with the skull by a continuous chain of bones, as in the Cat,



FELIS TIGRIS.

THE TIGER.

FELIS TIGRIS, Lian. Syst. Nat. (1769) vol. i. p. 61, sp. 2—Eral. Syst. Regn. Anim. (1777) p. 603. sp. 2—Schreb. Singeth. (1778) Th. iii. p. 331, tab. xviii.—Ganch. Syst. Nat. (1789) vol. i. p. 1, p. 76, sp. 3.—Yall. Zoog. Ross-Asim. (1811) vol. i. p. 13.—Fireb. Zoogn. (1841) von. ii. p. 217, sp. 3.—Dan. Navo. Diet. liii. Nat. (1816) vol. i. p. 21—da. Mam. (1890) p. 219. so. 327, p. 91. fig. 2, and pl. 22 fig. 1.—Cvv. Osem. Ponc. (1823) vol. iv. p. 444.—Team. Mon. Mam. (1827) vol. i. p. 88.—Leas. Man. Mamm. (1827) p. 18. sp. 3.—Cvv. Toon. Regn. Anim. (1829–19. is, B. it. fig. 2.—Lede). Max. Hint. Nat. pl. ~Vyg. Men. Raf. (1890) p. 638.—Lead. Nat. Libr. vol. vvl. p. 139, pl. 6.—Sain. Anim. Meng. (1939) p. 100.—Binar. Voltogr. (1856) del you. ii. All. ph. vvg. ja. vvl. ~Vys. p. 139, pl. 6.—Sain. Anim. Meng. (1939) p. 100.—Binar. Voltogr. (1856) del you. ii. All. ph. vvi. ja. iii. vvi. vv. −Leas. Nav. Th. Mar. Jan. (1893) p. 600.—Sain. Anim. Meng. (1939) p. 100.—Binar. Voltogr. (1856) del you. iii. All. ph. vvi. p. −Leas. Nav. Th. May. Anim. (1897) e p. 49. pl. 3.—Hint. Sour. Asim. Sain. Asim. (1898) p. 600.—Sain. Anim. Parag. (1939) p. 100.—Binar. Voltogr. (1858) del you. Anim. Parag. (1859) p. 100.—Sain. Anim. Parag. (1859) p. 100.—Binar. Voltogr. (1858) del you. Parag. Soc. Beng. (1845) p. 341. sp. 2.—Horsf. Cat. Mamm. Mus. E.-Ind. Co. (1851) p. 43. sp. 72.—Gerv. Hist. Nat. Mamm. (1855) p. 83. see mer. (1992) p. str., pp. z=Hent. Car. Mann. Mus. E-the. Co. (1981) p. str. pp. 27—1997. Fills Nob. Manne (1885) p. str. pp. 19—1997. Prof. (1885) p. str. pp. 140—1919, pr. Col. Sec. (1895) p. 631.

-Flower, Proc. Zool. Sec. (1999) pp. 15, 16—9916, Proc. Zool. Sec. (1999) pp. 15, 16—9916, p. str. pp. 140—1919, pp.

TIGER, Pennant, Hist. Quad. (1793) p. 277.

LE TIGRE ROYAL, F. Cuv. & St.-Hil., Hist. Nat. Mamm. (1819) vol. ii. pl. 118.

BENGAL OR ROYAL TIGER, Griff. Anim. King. (1827) p. 440, pl.

FELIS TIGRIS, var. a. MONGOLICA, Less. Nouv. Tab. Règu. Anim. (1842) p. 50.

FELIS TIGRIS, var. b. NIGRA, id. ibid.

FELIS TIGRIS, var. c. ALBA, id. ibid.

TIGRIS REGALIS, Gray, Cat. Mamm. Brit. Mus. (1842) p. 40.—Id. Cat. Hodg. Coll. Mamm. & Birds Nepal & Thibet, (1846) p. 4.—Id. Cat. Hodg. Coll. Mamm. Brit. Mus. (1863) p. 3. sp. 23.—Id. Proc. Zool. Soc. (1867) p. 263.—Fitzin. Sitzungsber. Akad. Wiss. Wien, (1868) Iviii. p. 446.—Gray, Cat. Carn. Mamm. (1869) p. 10.

TIGRIS STRIATUS, Severtz. Rev. Mag. Zool. (1858) p. 386.

TIGRIS SONDAICA, Fitzin. Sitzungsber. Akad. Wiss, Wien, (1868) lviii. p. 454.

TIGRIS LONGIPILIS, id. ibid. p. 455.

TIGRIS REGALIS ALBA, id. ibid. p. 448.

TIGRIS REGALIS HYBRIDA, id. ibid. p. 450.

Han. Southern India, from the Indus to the south-east boundary of China, Java, Sumatra, and probably Borneo (Hobsfield). Common in the forests of Burma (Blyth). "Peculiar to Asia, extending westward as far as Mount Ararat. A few are annually killed in Turkish Georgia. More numerous in the Elburz Mountains, south of the Caspian (the ancient Hyrcania). North of the Hindu Kosh Tigers occur in Bokhara, and proved troublesome to the Russian Surveying Expedition, on the shores of the Aral, in midwinter. They are also found on the banks of the Irtisch, and in the Altai region, and thence castward to the Amurland or Amuria (where they are very destructive to cattle), and round by China and Indo-China to India southward of the Himalayas; but the species does not extend into Ceylon. It inhabits the Malayan peninsula, Sumatra, Java, and Bali, but is not met with in Borneo; neither does it occur in the great Thibetan range of High Central Asia" (BLYTH).

Without the majestic and dignified appearance that is so characteristic of his great rival the Lion, the present species is remarkable for the gracefulness and agility of his movements and the beauty of his coat. Of their moral character hardly any thing favourable can be said for either of these great Cats; but it would seem that the Tiger possesses a more cruel disposition, and frequently slavs merely for the pleasure of killing, and for indulging his bloodthirsty propensities. His frame being lighter than that of the Lion, his activity is greater, while his physical force is only surpassed by that of the Elephant. The Tiger is chiefly found in India from Cape Comorin to the Himalayas, and is known to dwell on those mighty mountains, as high as 8000 feet elevation. It extends its range as far west as Georgia, and is met with in

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Persia, Amurland, and China. Elphinstone states that it is not uncommon in Afghanistan; and Licent. Irwin says the Tiger Persu, Amuriana, and Chana Laplamonne states time design and an account of the state of the stat as found as the as Tunkung, atmongu at that the temperate tunners as the state of the temperate tunners as the state of th terocity. Atkinstrate mornis is that this special has used and the special many designs steppe into the diral Mountains; and Arthur Adams records, in his 'Travels in Japan and Mantchuria,' that he found remains of the Tiger both at the Kores and at Vladimir. The Kirghis say that the Tiger is very fond of pork, and, wherever the wild bears are numerous, there he takes up his abode. Adams also remarks that this species is abundant in the province of Liantung, the skins he purchased being cheap. The Manchu Tartars have a novel way of capturing this formidable beast. A deep and wide ditch is dug, of a circular form, leaving an island in the centre, where a man takes his position. The ditch is hidden by a covering of brush; and when the Tiger perceives the man he makes a spring, but, falling short, is speared by the hunters lying in wait. In the Korea great value is apparently placed upon the skins, which are reserved for the chiefs They are warm and more woolly than those from India. Although the Tiger is popularly supposed to be only a dweller in tropical regions, he is capable of supporting very great cold; and, according to Dode, in the regions of the Amoor river he is much less ferocious than the Tiger of Bengal, never attacks of his own accord, but flees when pursued, and only defends himself when mortally wounded. This northern animal, like the Leopard of the same latitudes, has long fur, is much lighter in colour than its southern brethren, and is thereby prepared for the low temperature which it experiences during a certain part of the year. One, brought by Mr. Dode, and which is now in the Museum of Natural History of New York, is represented by the long-haired individual in the Plate, the figure being a faithful likeness of the example. These thick-furred specimens have been regarded by some as representing, if not a separate species, at all events a wellmarked variety of the ordinary Tiger. This, however, is an incorrect view; for it appears that the long-haired animal does not exclusively belong to the northern regions, as I ascertained from the fact that a skin, shown to me by Prof. A. Milne Edwards, belonging to a Tiger which originally came from Bengal, and lived for three or four years in the Museum of the Jardin des Plantes, had a very long and thick fur, very similar to that of specimens from Siberia and Northern Asia. The skulls of some northern Tigers were sent to England by Mr. Swinhoe from China, and critically examined by Prof. Busks and his conclusions were published in the 'Proceedings of the Zoological Society of London.' One of these skulls was from Fychoo, 120 miles inland from Ningpo, on the south-east coast of China; and the other belonged to a Mantchurian Tiger from Kirim, in the north of the empire. This latter was taken out of a long-haired skin, procured by the Governor of the port of Newchwong; so that its genuineness cannot be doubted. The Fychoo skull belonged to a short-haired animal undistinguishable, in Mr. Swinhoe's opinion, from the Bengal Tiger. "The closest comparison," says Prof. Busk, "I have been able to make between these two externally distinct varieties fails to indicate any thing approaching to a specific distinction between them; nor, again, do they appear in any respect to differ, so far as the cranial and dental characters are concerned, from the Indian species." It is undoubtedly the fact that the long hair is only given to the animal as a protection against the cold, as is also the case in the thickly furred Cheetah, and cannot be regarded as in any way indicating a specific character. Individuals of the species living upon the islands of the Eastern Archipelago vary also from those found on the continent. Thus specimens from Sumatra are smaller than Indian and Asiatic Tigers, and do not exhibit any white about the face and throat, these parts being buff, while the general colour is a dark red, but with the stripes distributed as in the typical style. Captain Forsyth says that in India the native shikaris recognize two kinds of Tigers dodhia bagh and contin bagh—the first being a light and active beast, the latter a heavier animal, with a faintly striped coat. These differences, however, are probably only the result of age, and do not indicate two species, as the author further remarks that the above names are only given to extreme specimens, the majority being of an intermediate character, not distinguished by any name. He says that the larger and older the animal is, the more yellow his coat becomes, and the fainter and further apart are the stripes. Small Tigers are sometimes so covered with stripes as to present the appearance of being almost a melanoid variety. Occasionally white Tigers with fulvous stripes have been killed; but they are rare. The Tiger usually resorts to dense thickets, long grass, and brushwood, on the banks of rivers, and places covered with tamarisk. These are its favourite hiding-places in hot weather; and Captain Forsyth states that when this cover is extensive and the river-banks are furnished with thick scrubby jungle, through which ravines lead to the open country, where cattle graze, a Tiger is certain to be found in it during the hot season. Occasionally numbers of this species are met with in such localities; and the author just mentioned says that on two occasions he has known five, and once seven, Tigers to be driven out of one cover at the same time. He imagined that the season of love-making had something to do with these

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gatherings. In Lower Bengal Jerdon states that the usual lair of the Tiger is in the heavy grass-jungles and swamps The average length of a full-grown male is from 9 feet to 9 feet 6 inches, and that of a female about a foot less. When greater dimensions are given they are probably taken from the skin after it has been stretched. Capt. Forsyth says that the skin of a 10-foot Tiger will easily stretch, if required, to 13 or 14 feet; and Jerdon states that he never saw one that measured more than 10 feet and 2 or 3 inches. He adds that in Lower Bengal Tigers are more abundant than in other parts of India, and are said to be both larger and more savage than those from other localities. Happily they are probably not as numerous anywhere in that country as they once were; for Sykes mentions that in the province of Khandeish 1032 were killed from the years 1825 to 1829 inclusive, as he gathered from the official returns handed to him. The Tiger preys upon cattle, various kinds of deer, the wild hog, &c.; and when animals are scarce, as recorded by Sir Walter Elliot, it has been known to feed on frogs. This writer also mentions that, when one of these great Cats had been killed, it was found to be extremely emaciated from inability to swallow, on account of a porcupine's quill having gone through the gullet. This had probably become fixed there when the Tiger had endeavoured to seize one of those animals The same gentleman once found a full-grown Tiger nearly killed, evidently by the rip of a boar's tusk; and two similar cases were related to him by others who had witnessed them. So it is clear that this creature does not always come off victorious in his encounter with the other inhabitants of the jungle, although they may be his inferiors in strength. This species will also feed upon any carcass that it may chance to meet with, and has been known to practise cannibalism to a certain extent, as is proved by the following:—A sportsman in Khandeish, having killed a Tigress, sent a servant with an elephant to bring it into his tent. The messenger soon returned, and stated that he found her alive. The next morning. on going in search, it was discovered that the animal had been dragged into a ravine by another Tiger, and half of the carcass had been devoured. They found this beast close by, and killed him also. Generally this species is cowardly, and retreats from man's presence, except when wounded. Instances have been recorded when this animal, having seized the boy who was watching cattle, was compelled to release his victim by the herd charging in a body and driving the Tiger off. It is stated that this species will kill an ox about every five days, and, if hungry, will cat both hind quarters the first night. He then hides the careass under some bank, covering it with leaves &c., and returns to it the next night, and finishes it all but the head, and on the third night picks all the bones. If he is disturbed during any of these visits, he abandons his prey, and kills some other animal at the first opportunity. A Tigress and cubs, however, will finish a bullock, according to Captain Forsyth, in a single night. The mode of killing the prey is to seize it by the nape of the neck with the teeth holding the victim by the paws in order to get a purchase for the wrench that dislocates the neck. Young Tigers are more destructive than the old ones, and will occasionally kill four or five cows at once. The muscular power of this beast is wonderfully great. Instances, related by thoroughly reliable persons and authors of repute, are not wanting to prove the Tiger's ability to pull down the Elephant to his knees, and even to kill him. Two officers were hunting Tigers in Central India, when one was discovered lying in the shade of a dense bush. As soon as it was fired at it charged, and mounted onto the elephant's head, and lacerated the animal terribly about the trunk and eyes. The mahout struck the Tiger on the head with his iron driving-hook, and battered his skull so as to leave marks in the bones. At length the beast was driven off; but as soon as the elephant was urged on again the Tiger charged as before; and on the elephant turning round to run away, mindful of the punishment she had already received, the Tiger caught her by the hind leg, and fairly pulled her over onto her side. The brute was eventually killed; but the elephant also died from her injuries. A writer in the 'Field' newspaper, over the signature of "ROHILLA," relates that when once hunting in a very celebrated Tigor beat called Rutnal, one of the pad-elephants was unexpectedly charged by a Tiger, even before he had been wounded, and pulled down onto her knees. Urging his own elephant to the rescue of his followers, who had been thrown into the grass almost on the back of the Tiger, the hunter was charged by the enraged brute, which mounted at once onto the pad, close to the howdah. Holding his rifle like a pistol, he fired twice into the creature's face, when it dropped off, and went, growling horribly, into the grass. The elephants were immediately sent in again; and again the beast charged one; and although, as was afterwards ascertained, the Tiger was desperately wounded, having a jaw broken and a fearful hole through his neck close to the vertebrae, he succeeded in getting his fore paws onto the pad, caught it in his teeth, and by sheer weight and force, for his hindquarters were off the ground, he pulled the elephant over. The beast was at length killed by a lucky shot in the spine, when in the act of charging another elephant. Captain Forsyth imagines that the Tigress does not breed more than once in three years, as the cubs stay with her over two years, or until they are nearly full-grown. The

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greatest number he had ever seen with their mother was three; but they were small. The cubs are in the habit of springing against trees, and serucing the bark with their class, as though evalting in their strength, and, should they get among a herd of eathe, strike down as many as they can reach. When the Tigress has been deprived of her cub she exhibits great distress, and for several nights afterwards stays about the same place, roaring all the time in a very excited manner. Nothing, perhaps, in the animal kingdom can exceed the beauty and grandeur of the Tiger when, free and fearing monnes. Assuming permaps, as see animal angum can execut one county and granted or too age, which are made anothing, he roams at will in his native jurgles. Perhaps no one had more experience with this terrible animal than the late Captain Fooyth; and he gives, in his book on the highlands of Central India, a graphic description of his meeting with a Tiger, just as the sus had risen, as the brute was returning to his lair after a night passed in some murderous foray. The route the beast was taking was plainly shown to his pursuer by the action of the monkeys; for as he passed beneath the trees on which they were, the nimble animals climbed up to the highest branches, shook them violently, and poured forth a torrent of above at their mortal enemy that could be heard for miles away. The river, along whose bank the Tiger was walking, made a great curve; and by swimming across the neck of this the hunter succeeded in getting ahead of the animal, and, having hid himself, waited for the creature to come up. At length he was visible, advancing with a "long slouching walk, with his tail tucked down, and looking exactly like the gully midnight murderer he is. His misdeeds evidently sat heavily on his conscience; for as he went he looked fearfully behind him and up at the monkeys in a beseeching sort of way, as if asking them not to betray where he was going." When nearly opposite to the Captain, he came out from the trees into "the faint yellow light of the just-risen sun; and be looked such a picture of fearful beauty.—with his velvety step and undulating movements, the firm muscles working through his loose glossy skin, and the cruel yellow eyes blinking in the sun over a row of ivory teeth, as he licked his lips and whiskers after a night's feed." As he reached the mouth of a small ravine the hunter fired; and with a roar that silenced every chattering monkey in the trees the beast bounded into the thicket. Shortly afterward, on following him, the animal was found lying dead, shot very near the heart. The Tiger is very fond of certain localities, and year after year, if not killed, will be met with in the same place, although others equally suitable may be quite near. It likes to haunt ruins and lie on the top of walls. Like the Lion, occasionally the Tiger becomes a man-eater; and when he has once commenced this practice, he seeks this kind of prey in preference to any other. It is generally observed that old Tigers are the ones that seek human food; for, their teeth becoming blunted and decayed, they cannot easily overpower cattle or other beasts. The destruction caused by these cannibals can be best appreciated from the report made by Captain Rogers to the Social-Science Society, when it appeared that a single Tigress caused the destruction of thirteen villages, and 256 square miles of country were thrown out of cultivation. In 1869 one Tigress killed 127 people, and stopped a public road for many weeks. In Nuydunca a Tigress in 1867, 1868, and 1869 killed respectively 27, 34, and 47, total 108 people. The Chief Commissioner of the Central Provinces in India reports the following number of persons killed by Tigers:—1866-67, 372; 1867-68, 289; 1868-69, 285; total 946. Jerdon says that in the Bustor country, south-east of Nagpore, he found that in several parts the villages were deserted entirely on account of the ravages of Tigers, even although they had been protected by high stockades. He also states that in the Mundlah district, east from Jubbulpore, on an average between two and three hundred villagers were annually killed. The above facts, to which many others might be added, exhibit sufficiently what a dreadful scourge this animal is in the various districts in which he is found. The author just mentioned remarks that among the natives many superstitions prevail regarding the Tiger. They believe that every year an additional lobe is added to its liver, and that the flesh possesses medicinal properties, that the claws arranged in a circle protect a child from the evil eye when hung around its neck, and that the whiskers are a deadly poison; consequently they are burnt off as soon as the animal is killed. The flesh of the Tiger is eaten by some of the lower eastes in India.

This active creature ascends trees to a certain height with great facility; and a wounded individual does not hesitate to attack his adversary in a tree, should be happen to have taken such a position in order to be in a secure place from which to fire his rifle. It is related that several officers of the 76th English Regiment, stationed in India, went on a Tiger-hunt near the Manair river, about 15 miles from its junction with the Godavery. A Tiger was started, and was endeavouring to break back towards the beaters, when a shot turned him; and he then galloped towards a tree in which a lieutenant and his attendant were posted about 10 feet from the ground. Two ineffectual shots were given, when the beast sprang into the tree, dragged the gun-bearer to the ground, and then, returning, brought down the officer also. His friends came to his rescue; and the Tiger was killed; but the unfortunate men were so mangled that they both died two days afterwards.

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The usual colour of the Tiger is a dark tan, striped irregularly with black. No two individuals are marked exactly alike; and the shade of the ground-colour varies greatly. As before stated, the specimens from Sumatra are darker than those from the continent, and without white on the face; while those from Siberia and the far northern parts of Asia are very light in colour, the fur generally long and thick, the tail inclined to be bushy, and the white of the face and underparts is very extensive and pure. M. David states that in Mantchouria the colour also varies greatly, some individuals being of a brownish black, others perfectly white.

The skull of the Tiger is very similar to that of the Lion; and there is not much difference between them in size, frequently that of the present species being fully as large as the largest of those belonging to its great relative. One character will always serve to distinguish the skulls of these great Cats from each other. The frontal processes of the maxillæ are truncated in the Tiger, but pointed in the Lion. If a line is drawn connecting the ends of the frontal processes of the maxillaries, it will be found to fall below the frontal processes of the nasals; in the Lion it will go above them, and rest entirely on the frontals. The nasals are depressed posteriorly, and form a median groove at the symphysis. The inner bounding line of the lower half of the nasal aperture in front takes the form of a double curve. As a rule also the interorbital space is not quite so wide nor so flat in the Tiger as in the Lion. The inferior border of the ramus is straight, without any indication of the process under the last molar, always present on the jaw of the Lion. When viewed from above, the Tiger's skull appears long and narrow.

The Plate contains representations of the various styles of Tigers known. The figure in front, lying down, exhibits the ordinary Bengal Tiger; the one sitting behind is the long-haired form from Northern Asia; and the sleeping figure is the Sumatran style, without any white markings. All are portraits, every mark and line having been accurately copied from the specimens.



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THE SNOW-LEOPARD.

FELIS UNCIA, Erdeb. Syst. Mamm. (1777) p. 568—Schreb. Singeth. Th. iii. p. 386, pl. c. (1778)—Gund. Syst. Nat. (1788) vol. i. pt. i. p. 77; qp. 9.—Cuv. Osem. Fors. (1829) vol. iv. p. 447.—H. Smith, in Griff. Anim. King. (1827) vol. iii. p. 446.—Swain. Anim. Menag. (1838) p. 142.—Holdg. Journ. Anim. See Beng. (1842) vol. iv. p. 176.—J. Grey, Cat. Mamm. Srit. Mas. (1842) p. 41.—Jard. Nat. Libr. vol. voi. p. 191, p. 181.—Gerv. Nut. Hist. Mamm. (1850) p. 85, pl. xxi. fig. 11.—Hord. Proc. Zool. Sec. (1859) p. 395. qp. 172.—Blyth, Proc. Zool. Sec. (1859) p. 185. qp. 267.—Mamm. Ind. (1875) p. 169. pp. 169.—Mentar. Noise, Jard. Mamm. Ind. qp. 344.—Hutton, Proc. Zool. Sec. (1876) p. 633.—Dude. Proc. Zool. Sec. (1877) p. 431.—Blanf. Proc. Zool. Sec. (1877) p. 432.—Blanf. Proc. Zool. Sec. (1877) p. 432.—Blanf. Proc. Zool. Sec. (1877) p. 432.—Blanf. Proc. Zool. Sec. (1877) p.

ONCE, Penn. Hist. Quad. (1793) vol. i. p. 285. sp. 185.

FELIS PARDUS, Pallas, Zoog. Rosso-Asiat. (1811) t. i. p. 17?—Fisch. Zoogr. (1814) p. 220. sp. 3, var. B.

FELIS IRBIS, Ehruch Ann. Sc. Nat. (1889) z. xt. j. 284.—Leac. Compl. Buff. (1839) vol. i. p. 466.—I. Newr. Tab. Rign. Janim. (1849) p. 81. vp. 247.—Milddend. Sibir. Reise, (1847-20) Band ii. p. 73.—Schrucck, Reis. Ferrich. Amarlande, (1859) Band i. p. 80.—Radde, Reis. Sult vm Ott-Sibir. (1862) Band i. p. 164.—Marray, Geogr. Dieir. Mamm. (1869) p. 99.—A. Milmo-Eder. Recher. Mamm. p. 213.
LEDOFARDUS UNCLA, J. E. Gray, Cat. Mamm. Berl. Musc. (1842) p. 41.—Adams, Free. Zool. Soc. (1869) p. 314.—Hodg Cat. Coll. Mamm. Brit. Musc. (1869) p. 26.

UNCIA IRBIS, J. E. Gray, Ann. & Mag. Nat. Hist. vol. xiv. (1854) p. 394.—Id. Cat. Carn. Mamm. (1869) p. 9. fig. 11 (skull).—Id. Proc. Zool. Soc. (1867) p. 262. fig. 1 (skull).

FELIS UNCIOIDES, Horsf. Ann. & Mag. Nat. Hist. (1855) 2nd ser. vol. xvi. p. 105.

FELIS TULLIANA, Valencien. Compt. Rend. (1856) t. xiii. p. 1035.—Tchihatcheff, Asie Min. (1856) p. 613, pl. i.

PANTHERA IRBIS, Severtz. Rev. Mag. Zool. (1858) p. 386.—Fitzin. Sitzungsb. Akad. Wiss. Wien, (1868) lviii. p. 478.

HAB. Snowy regions of Middle Asia, Thibetan plateau. Asia Minor (Danford). Mountains east of Smyrms (Blattel).

Altai Mountains (EREENBERG). Amoor river and island of Sakhalien (SCHERNCK). Western China (FONTANIER).

Turkstan (Door). Cores (Skendol).

THE Snow-Leopard is disposed sparingly over all the snowy regions of Western Asia, and as far to the eastward as the Corea. A specimen described as distinct by Valenciennes was obtained in the mountains east of Smyrna, the most western locality that I know in which this animal has been found. Although not particularly shy, this species is seldom seen by hunters, and is comparatively rare in the districts it inhabits. On the Himalayas it lives at as high elevations as any animal can exist, varying from 9000 to 18,000 feet, and is most common on the Thibetan side of these mighty mountains. On the southern slope of this range, when met with, this animal is found generally in the grassy region between the limits of the forest and the snow, or in the birch- or pine-woods and scrubby brush, where the limits of the eternal snows are reached. This fine creature preys chiefly upon the burral, or common wild sheep (Ocis nahura), and on musk-deer, domestic sheep, goats, dogs, &c., but does not attack man. One reason that it is so seldom seen in its native wilds is that it hunts usually by night, like all the Cat tribe; and when by chance it goes forth by day it is also then on a hunting expedition, and is more likely to see a man, who may be in its vicinity, than be observed itself; and it then quietly withdraws to some other locality. Wilson, who probably knew more about the animals in the Himalayas than any other European, states that in twenty years he only saw about a dozen of these Leopards, although he deemed it not improbable that he had been watched himself by hundreds of them. He says it is very difficult to drive this animal away at night when he has come to attack a flock of sheep if the shepherd has no good dogs; and he had heard of one allowing himself to be pelted with stones all night rather than be driven from the vicinity of his intended prey.

Mesers. Danford and Alston state that this animal is not uncommon in the mountains near Smyrna, and on those of the neighbouring coasts. Though generally sly, it at times is very bold. On one occasion Danford shot a wild goat which fell over a cliff; and to reach the spot where the animal lay it was necessary to make a crienti which occupied about the minutes, but on arriving at the place nothing remained to show where the goat had been, but a pool of blood and a term instates but on arriving at the place nothing remained to show where the goat had been, but a pool of blood and a

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handful of hair. In the snow the tracks of two Ounces were plainly visible; but nothing was ever seen of either the goat

The specimen described by M. Valenciennes was brought from Ninff, in Asia Minor, by M. Tchihatcheff, who mentions the circumstances of its enture in the following words — En 1850, je me trocruis à Ninté précisément un jour que des chasseurs gree y apportaint en triomple les déponilles d'une magnifique et grosse partière qu'ils vennient de tuer tout près du rillage dont elle resuguit les environs depuis bien longtemps; je m'empressai de faire l'acquisition de la précieuse dépouille, et à mon retour à Paris je fit don de la peur au Muséum du Jurdin des Plantes, où l'animal, très-habilement monté, est esposé aujourd'hui." This example was described by Valencienne, in the 'Comptes Rendus' for 1856, as Felix talliana, but as it is identical, in my opinion, with the present species, I have placed his name as a synonym of F. uncius, Schreber. M. Alphonse Milas-Edwards, in the 'Recherches des Mammilters,' contends that Valenciennes's specimen is a distinct species, and founds his characters upon the markings of the fur, its slightly different colour in certain parts, and its length on the chest. I think it is hazardous to endeavour to maintain a species among these spotted Cats when the only differences from an acknowledged form are to be found in the length of fur and in the size, shape, and arrangement of the spots, as these last always vary greatly, not only among individuals universally accepted as belonging to the same species, but even upon the two sides of the same animal. So certainly is this last statement a fact, that I have seen specimens of various species in this family appear altogether different as one or other of the sides was brought into view. In stuffed specimens also, it must be borne in mind, the arrangement of spots and stripes is not altogether independent of the taxidermist, as he may be possessed of more or less skill in the manipulation of his subject; and it is not unusual to see in museums the effigy of some unhappy Felis, which, if it were suddenly brought to life, would not only be unable to recognize itself, but certainly would never be acknowledged by the living members of the family as belonging to any existing species, so distorted would it appear both in its markings and shape. I have examined the specimen carefully in the Paris Museum, described by Valenciennes; and although M. Alph. Milne-Edwards's description is perfectly accurate, I cannot bring myself to believe that the example represents a distinct species, but that it is only one of those variable forms which are extremely common among the members of this family, and which we have not been so accustomed to see in individuals of the present species simply on account of their great rarity. That Snow-Leopards do vary both in their markings and colouring, like all other Cats, I have had proof, from the examination of the specimens in different continental museums; and one, in the Leyden Museum, from the Corea, the most extreme example I have seen, I describe below. To constitute any of these forms distinct species, unsupported by any osteological difference, would, it seems to me, only pave the way to endless confusion, since it would be impossible to know where to stop; and as no two Cats are ever exactly alike in their colour and markings, eventually every specimen would claim a distinct specific rank. Dode states that this animal is quite common in Turkestan, where the skins, badly matched, are sold to the Chinese at rather high prices.

Fur soft, rather long, thick. In the typical style the entire animal is pale greyish or yellowish white. Top of head and cheeks thickly marked with small black spots. Back marked with irregular black rings, having three or four small black spots in the centre; sides and outer side of legs having the same rings, their centres grevish without spots, these rings towards the lower part of the legs showing an inclination to become solid, with little or no black centres. Tail nearly as long as the body and of the same colour, tipped with black and marked with numerous irregular broken rings of black, which do not encircle the entire tail; near the rump the tail is marked similarly to the back. Inside the hind and fore legs are sparsely spotted with black. There are no stripes upon the face, as is generally the case with species of this family; and the shape of the head is peculiar in the sudden rise of the forehead. Ears rather small, behind greyish, the edges black. The breast and belly are lighter in colour than the upper parts, approaching nearer to a pure white, and unspotted. The size of this species is that of an ordinary Leopard.

Sometimes individuals present a richer colour than the style described above. A specimen in the Leyden Museum, brought by Siebold from the Corea, is a rich buff in colour, the spots large and black, frequently with a buffy centre; they are very distinct upon the fore and hind quarters, where they are large, black, and solid, without any light centres. The inside of the fore and hind legs is white, but spotted as thickly and distinctly as is the outside. The tail is a little lighter than the body, marked like those of the ordinary style. The back and head are very rich buff, brighter than the flanks. In size it is about the same as the ordinary style. It would from this appear that this species varies in its colouring as greatly as do the majority of the Cats; for I have no reason to believe that all these Leopards from the Corea are coloured in the same manner as is this single specimen.

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A specimen of this species in the Paris Museum, obtained in the mountains of Asia, near the Persian border, is peculiar from having the spots, which are usually arranged in irregular rings, almost obsolete upon the sides of the body, being only just discernible. On the top of the head, however, and back of the neck, as well as in the centre of the lower part of the back, the spots are small and intensely black, thus making the general light grey colour of the rest of the body only the

The skull of the Snow-Leopard is remarkable for its high, suddenly raised forehead. The face is short, broad, and rather flat above; naso-premaxillary region remarkably truncate, and a depression at the junction of nasals and frontals; the zygomatic arches are unusually stout, and the orbits are incomplete behind. The profile view of the skull is greatly arched on its upper outline. Superior canines moderate in size. Length of skull 6; inches, breadth 4; inches.



FELIS ONCA.

THE JAGUAR.

(1627) vol. 1 p. 160. – 1288. atam. 1480m. (1827) p. 191. 3p. 610. – 1880. 5 p. 180. 5 p. 190. 5 p. 190. 5 p. 1. Oarth. Lond. (1831) p. 95. – Wils. Illust. Zool. (1831) pl. ix.—Cur. Hist. Nat. Mamm. (1834) vol. ii. pls. 133–136.—Rugger, Zool. Journ. Lond. (1831) p. 35.—Wilk. Ilbuit. Zool. (1831) pl. 1x.—Orr. Illu. Nat. Mann. (1849) vol. i. pl. 133-136.—Bagger, Zool. Journel, (1885) vol. v. p. 470.—Aran, Nat. Illut. Gend. Parag. (1893) p. 184.—Swain. Janim. Manag. (1889) p. 193.—Blaux. Oxforgr. (1892-04) Ali, pls. ii, viii. vi. i. str.—Len. Comp. Bell. (1839) vol. i. p. 460.—Wag! Suppl. Serber, Singeth. (1841) vol. ii. p. 473.—Jans. Nover, Tab. Baga, alam. (1849) p. 30. ii. p. 184.—Oliv. Bagg. Vol. Len. Parag. (1847) p. 21. Mann.—And. & Bioch. Goads. N. pls. viii.—Bard, Bag. alam. (1849) p. 30. ii. p. 184.—Chris. Parag. (1847) p. 21. Mann.—And. & Bioch. Goads. N. pls. viii.—Bard, Bag. alam. (1849) p. 40. ii. p. 474.—Bard. Parag. (1847) p. 474.—Bard. (1847) p. 474.—Bard. (1847) p. 474.—Bard. (1847) p. 474.—Bard. (1847) p. 474.—Chris. Proc. Zool. Soc. (1849) p. 64—Sart. Nov. Chris. (1847) p. 59.—Scharr, Proc. Zool. Soc. (1849) p. 414.—Chris. Proc. Zool. Soc. (1849) p. 50.—Marray, Gosp. Dick. Mann. (1849) p. 59.—Scharr, Proc. Zool. Soc. (1849) p. 414.—Chris. Proc. Zool. Soc. (1849) p. 50.—Marray, Gosp.

FELIS NIGRA, Erzl. Syst. Règn. Anim. (1777) p. 512. sp. 8.—Less. Nouv. Tab. Règn. Anim. (1842) p. 52, var. B.

DIE UNZE, Schreb. Sängeth. (1788) Th. iii. p. 386, tab. C.

BRASILIEN TIGER, Penn. Hist. Quad. (1793) p. 286. sp. 186, pl.

BLACK TIGER, Penn. Hist. Quad. (1793) p. 290. sp. 190, pl.

FELIS JAGUAR, Temm. Mon. Mamm. Append. (1827) p. 256.

LEOPARDUS ONCA, J. E. Gray, Cat. Mamm. Brit. Mus. (1842) p. 41.—Id. Proc. Zool. Soc. (1867) pp. 264, 402.—Id. Cat. Carn. Mamm. (1869) p. 2.—Id. Ann. & Mag. Nat. Hist. (1874) vol. xiv. pp. 352, 377.

LEOPARDUS HERNANDESI, J. E. Gray, Proc. Zool. Soc. (1857) p. 278, pl. 58, (1867) p. 402.

FELIS PALEOPARDALIS, Severtz. Rev. Mag. Zool. (1858) p. 198 (hybrid F. once and F. parda).

PANTHERA (JAGUARIUS) ONCA, Severtz. Rev. Mag. Zool. (1858) p. 386.

PANTHERA ONCA, Fitzin. Sitzungsb. Akad. Wiss. Wien, (1869) lix, p. 211.

PANTHERA ONCA MINOR, id. ibid. p. 216. PANTHERA ONCA ALBA, id. ibid, p. 218.

PANTHERA ONCA NIGRA, id. ibid. p. 219.

PANTHERA ONCA POLIOPARDA, id. ibid. p. 220 (hybrid F. ones and F. parda: vide Severtz, I. c.).

HAB. Southern North America, Central America, South America, North America from Rio Bravo southwards (BAIRD); Pampas of Buenos Ayres to most northern parts of Paraguay (Azara); coast of Patagonia, 40° south latitude to chain of the Tandil (D'ORBIGNY).

THE Jaguar is the largest and most powerful member of the Felidæ found upon the American continent. In his habits he resembles in a great degree the Puma, the only one of the Cat tribe in the western world that can rival him in strength and agility. The greatly extended geographical range of the latter animal causes it to be much more generally known than the present species; and the custom of the Jaguar to resort to dense thickets in the river bottoms is another reason why he is not so often met with by man. In such places he lies in wait for his prey, and springs upon whatever animals may come to the watering-places to quench their thirst. The country about the head-waters of the Rio Bravo appears to be the northern limit of the range of this ferocious animal; and it was seen by Mr. J. Weyss in the Guadaloupe canon (Sierra Madre), which Baird considers the western boundary of its dispersion.

D'Orbigny states that the Jaguar only goes to the 40th degree of latitude, and in the Pampas rarely lower than the range of the Tandil, and that in these southern regions individuals are generally yellow, almost white. Azara, however, unhesitatingly gives the Patagonia coast as part of its habitat, which would be south of 4 latitude. It probably ranges all the way from Texas, through Central and South America, into Patagonia. Whether it is found

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generally throughout this last-named district, I have laid no means of determining. Formerly this animal was extremely adordant in its native wilds; and Azara has related that when the Spaniards first settled the country between Monte Video and Santa Fé, as many as two thousand were killed annually. This slaughter, as may be supposed, soon caused the species to become comparatively scarce. Usually the Jaguar is found singly or perhaps in pairs; and it is only in the love-season, eccording to Azan, that any number associate together; and then sometimes

The Jaguar, it is stated, brings forth at the close of the year from two to four cubs, the greater number being usually as many as eight males are occasionally seen in company females. They resemble their parents; but the fur is somewhat longer and rougher than that of the adults. As soon as they are able to follow, which period Azara believes to be about fifteen days after birth, the female leads them about with her. Their size is then that of a domestic Cat; and for protection they look to their mother, who does not hesitate to incur any danger in their defence. This species preys upon most of the quadrupeds that are to be met with in the regions to which it resorts. Horses, cattle, dogs, the tapir, and capybara are quickly made to succumb before the enormous strength and fierceness of this beautiful but terrible beast. They do not dread water, and frequently swim wide and deep rivers. Azara relates that a Jaguar having killed a horse, on being disturbed took up the careass in his mouth, and, after dragging it for about seventy paces, entered a wide river, through which he swam, and disappeared with his prey in the woods on the other side. As a rule the Jaguar does not exhibit any unnecessary cruelty in destroying animals, only killing such as are requisite for satisfying his hunger; and should a bullock be voked to one he had just killed, it is said, he will leave it uninjured, after having made his meal off its dead companion. He does not attempt to conceal any food that he may not be able to consume at once, but leaves it to be eaten by any stray prowder who may discover it.
In his movements this beautiful creature is rapid; and by a sudden spring he alights on his prey, striking it at the same time to the earth with one blow of his powerful paw. This species frequently secures and feeds upon large turtles, often following them into the water, so eager does it become in their pursuit. Having gotten hold of a turtle, it turns the reptile over on its back, when it lies helpless. The Jaguar then inserts a paw between the shells, and by means of his terrible claws drags out the body of the reptile. So neatly and completely is this done that Humboldt says a surgical instrument could not be more effectual. In his desire to secure the turtles, the Jaguar frequently turns over more than he can eat; and this habit is taken advantage of by the Indians. who possess themselves of all that may be left. It is stated that when this animal has once tasted human flesh, he prefers it ever afterwards to all others, and then becomes a confirmed man-eater. Azara says that if a company are camping together, the Jaguar will take the dog, should there be one—if not, then the Negro, next the Indian, and only springs upon the Spaniard when there are none of the others present. While he was in Paraguay, six men had been killed by this savage creature, two of whom were seized in the midst of their companions, while warming themselves at

As a general rule the Jaguar is untamable, no matter how young when captured; and whenever he has been reared and kept as a pet, he has usually given cause to regret any misplaced confidence by seriously wounding some one who

ventured to play with him. Monkeys have a great dread of this animal, and usually utter loud and angry scoldings whenever they see one, or after hearing his roar in the forest. It is not improbable that the Jaguar occasionally seizes one as it is unconsciously passing near his hiding-places; but it is very doubtful if he would have any great success in pursuing such agile creatures among

In the fourth volume of his 'Personal Narrative,' Humboldt gives the following account of one of these animals he

"Near the Joval nature assumes an awful and savage aspect. We there saw the largest Jaguar we had ever met with. The natives themselves were astonished at its prodigious length, which surpassed that of all the Tigers of India I had seen in the collections of Europe. The animal lay stretched beneath the shade of a large Zamany, a species of Mimosa. It had just killed a Chiguire (Capibara, or Water-hog), but had not yet touched its prey, on which it kept one of its paws. The Zamuroes, a species of vulture, which we have compared above to the Percnopterus of Lower Egypt, were assembled in flocks to devour the remains of the Jaguar's repast. They afforded the most curious spectacle, by a singular mixture of boldness and timidity. They advanced within the distance of two feet from the Jaguar; but at the least movement the

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beast made they drew back. In order to observe more nearly the manners of these animals, we went into the little boat that accompanied our canoe. Jaguars very rarely attack boats by swimming to them, and never but when their ferocity is heightened by a long privation of food. The noise of our oars led the animal to rise slowly, and hide himself behind the Sanso bushes that bordered the shore. The vultures tried to profit by this absence to devour the Chiguire; but the Jaguar, notwithstanding the proximity of our boat, leaped into the midst of them, and, in a fit of rage, expressed by his gait and the movement of his tail, carried off his prey to the forest."

The cry of this great Cat (for it can hardly be called a roar) is represented, by those who have heard it in the forests where the animal loves to dwell, as loud yet very deep and hourse in tone. It is uttered most frequently by night,

particularly during the love-season, and consists of the sounds pu, pu, pu, often repeated.

The colour of the Jaguar varies greatly among individuals—some, as stated by D'Orbigny, being almost white, while others are found entirely black, the rosette markings of these last being only visible in certain lights. With so great a difference, therefore, in the colour of their coats, it may not be wondered at that the older authors considered that there were several species of this animal, particularly as their knowledge of this great Cat was limited and their specimens were few in number. The synonymy is on this account not inconsiderable in quantity, but at the same time not difficult to unravel, as no other species of this family can well be confounded with the Jaguar. The late Dr. J. E. Gray named a light-coloured specimen from Mazatlan, which was then (1857) living in the Gardens of the Zoological Society of London, Leopardus Hernandesi, founding his specific characters upon the form of the head, and the disposition of the spots on the body; but in 1867, on the death of the animal, he was obliged, from the examination of the skull, to acknowledge that it was not different from the usual form, and that the spots only represented one of the many varieties met with among this species. He also, in the 'Proceedings' of the Zoological Society for 1867, instituted the genus Leopardus, placing in it various species not particularly closely allied, such as the Leopard, the Puma, and the F. moormensis of Hodgson, and with these the JAGUAR. I have not been able to discover any thing, either in the osteology or outside covering of the present species, that should give to it a separate generic rank from the other members of this family, and have therefore not adopted

Individuals of this species vary considerably in size. Baird states that the largest he saw was a specimen killed near the mouth of the little stream Las Moras above Eagle Pass, and measured nearly five feet to the insertion of the tail. Azara gives the dimensions of one as follows:-Length 6 feet 9 inches; tail 2 feet 2 inches, circumference of root of the tail 8 inches, of neck 2 feet 11 inch, fore leg at the middle 1 foot 21 inches, ankle 81 inches, head close to the ears 2 feet 21 inches, chest 3 feet 111 inches; hind part of the body 2 feet 11 inches; height at shoulder 2 feet 9 inches; length of head as far as occiput 121 inches; ear 21 inches high, width 21 inches. Audubon, in his 'Quadrupeds of North America,' gives the following dimensions:-Nose to root of tail 4 feet 1 inch; length of tail 2 feet 1 inch; height of ear 2 inches; shoulder to end of claw 2 feet, length of largest claw 2 inches, around the wrist 7 inches, around chest 3 feet, around head 1 foot 94 inches; breadth between eyes 3 inches. This last may be taken as about the average size of a full-grown Jaguar. Although resembling the Leopard somewhat in his colouring, the Jaguar can always be distinguished from that animal, and, indeed, from all spotted Cats, by having the spots not scattered singly, but arranged in rosettes, with a single spot in the centre of each ring.

The three figures in the Plate represent the different coloration and marking exhibited by individual examples. The principal one is what may be designated the typical style; the one in the rear on the right is a portrait of the so-called L. Hernandesi, Gray; and the third shows the black variety.

Head, neck, body, outside of legs, and tail near the root rich tan-colour. Upper part of head and sides of face thickly marked with small black spots; rest of body covered with large rosettes, formed of from seven to eight black spots, these sometimes confluent, and with one or more black spots in the centre, and ranged lengthwise along the body in from five to seven rows. The black rings are heaviest and thickest along the back. A black mark at opening of the mouth on the under jaw. Lips, throat, breast, entire underparts, inside of legs, and lower side of tail pure white, marked with irregular spots of black of various sizes, those on the breast being long bars, and on the belly and on the inside of legs very large blotches. There are no bars across the face, as in most of the spotted Cats. The tail has large black spots near the root, some with light centres; but from about midway of its length to the tip it is ringed with black. Ears are black behind, with a large spot of buff near the tip. The black spots extend down the legs and onto the

feet, becoming smaller as they go down. Nose and upper lip light rufous brown. I do not give the exact number of rosettes, as some have in their descriptions, as they are not reliable; for no two animals are alike, and rarely do both sides of any one specimen present exactly the same pattern.

The skull of the Jagour resembles those of the Lion and Tigor, but is broader in proportion to its length, the width being about two thirds the length, with a converted and a broad must region. On the inner edge of the orbit is a fairly developed tuberele; but Gray is in crow when be states that this is not found on the skull of any other Cat, as I have seen it equally pronounced in Tiger skulls. The frontal processes of the maxillary are rounded, in as I have seen it equally pronounced in Tiger skulls. The frontal processes of the catendary are rounded, as the frontal-rosals articulation. The second sillon or farrow on the outer side of the crown of the canines is rudimentary, in some instances entirely absent.



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THE PANTHER, OR LEOPARD.

FELIS PARDUS, Lian. Syst. Nat. (1769) vol. i. p. 61. sp. 3.—Erd. Syst. Rign. Anim. (1777) p. 465. sp. 5.—Schrich. Singeth. (1776) Th. in. p. 384, tib. reix.—Gond. Syst. Nat. (1789) vol. i. pt. 1, p. 77, sp. 3.—Feath. Zonga. (1814) p. 139, sp. 5, p. 231, sp. 3, vor. yo. Donn. New. Det. Hill. Nat. (1465) p. 10.—Il Mammal. (1829) p. 29, no. 329.—Cr. vol. com. Feat. (1829) p. 139, sp. 3, vor. yo. Donn. New. Det. Hill. Nat. (1465) p. 10.—In Mammal. (1829) p. 20, no. 329.—Cr. vol. com. Feat. (1829) p. 149, sp. 48.—Henry A. (1829) p. 149, sp.

sp. 516.—Horsf. Cat. Mamm. Mus. E.-Ind. Co. (1881) p. 4s. sp. 73.—Bartl. Proc. Zool. Soc. (1861) p. 140.—Tristr. Proc. Zool. Soc. (1866) p. 92.—Jerd. Mamm. Ind. (1867) p. 99.—Sclat. Proc. Zool. Soc. (1868) p. 624.—Busk, Proc. Soc. (Sec.) p. 47. PANTHER, Penn. Hist. Quad. (1793) p. 281.

THE LEOPARD, Penn. Hist. Quad. (1793) p. 282.

FELIS PANTHERA, Pall. Zoog. Rosso-Asiat. (1811) vol. i. p. 19.

FELIS MELAS, Less. Mon. Mamm. (1827) p. 188. sp. 501.—Vig. Mcm. Raffl. (1830) p. 637.—Horsf. Cat. Mamm. Mus. E.-Ind. Co. (1851) p. 47. sp. 75.

FELIS ANTIQUORUM, Fisch. Syn. Mamm. (1829) p. 566. no. 6 a.

LA PANTHÈRE, F. Cuv. Hist. des Mamm. (1833) pls. 121, 122.

LEOPARDUS VARIUS, Gray, Cat. Mamm. Brit. Mus. (1842) p. 40. sp. a, b, c, d, c, f, g, h.—Adams, Proc. Zool. Soc. (1858) p. 513. sp. 6.— Swinh. Proc. Zool. Soc. (1870) p. 228.

FELIS PŒCILURA, Valencien. Compt. Rend. (1856) t. xlii. p. 1036 (light-coloured individual).

LEOPARDUS JAPONENSIS, J. E. Gray, Proc. Zool. Soc. (1869) p. 262. pl. xxxiii., (1867) p. 264.—Id. Cat. Carn. Mamm. (1869) p. 11. sp. 2.—Swinh. Proc. Zool. Soc. (1870) pp. 4, 628.

LEOPARDUS PERNIGER, Hodgs. Cat. Mamm. & Birds Nepal, 2nd ed. (1863) p. 3. sp. 25.

FELIS FONTANIERI, A. Milne-Edw. Ann. Sc. Nat. sér. 5, (Zool.) t. viii. (1867) p. 375.—Id. Recherch. Mamm. (1871) p. 208. pis. xxix., xxx. LEOPARDUS CHINENSIS, J. E. Gray, Proc. Zool. Soc. (1867) p. 264, fig. 2 (skull).—Id. Cat. Carn. Mamm. (1869) p. 11. sp. 3, fig. 2 (skull). LEOPARDUS PARDUS, J. E. Gray, Proc. Zool. Soc. (1867) p. 263.—Id. Cat. Carn. Mamm. (1869) p. 10. sp. 1.

PANTHERA NIMR, Fitzin, Sitzgsber. Akad. Wiss. Wien, (1868) lviii. p. 461.

PANTHERA NIMR NIGER, id. ibid. p. 466.

PANTHERA ANTIQUORUM, id. ibid. p. 466.

PANTHERA LEOPARDUS, id. ibid. p. 468.

PANTHERA VARIEGATA, id. ibid. p. 473.

PANTHERA ORIENTALIS, id. ibid. p. 477.

PANTHERA PARDA, id. ibid. p. 457,—Severtz. Rev. Mag. Zool. (1858) p. 387.

HAB. India generally: Dukhun (SYKES); Southern Mahratta country (Elliot). Malayan peninsula (Horsfield). Java, Sumatra (MÜLLER). Abundant in Malabar, the Wynaad, Goomsoor, and wooded parts of the Himalayas (JERDON). Common in Burma (BLYTH). Northern China, vicinity of Pekin (FONTANIER); island of Hainan (SWINHOE). Persia. Africa generally.

In the accompanying Plates I have given representations of the two styles which exist among the animals generally known as Leopards. To state exactly where one form ends and the other begins is impossible; but the large one, exhibited on the first Plate can, I believe, always be recognized by its long, broad head, dewlap, and large heavy body. It is lighter in colour than the ordinary Leopard, is usually received from Moroeco or India, inhabits the open country, and is met with but rarely in forests. Jerdon gives the colour of this animal (which he states is believed to be a distinct race by Indian sportsmen) as pale fulvous yellow, the belly white; but some are more tawny in hue, and others have no white beneath He further says that at Mhow he has had poures killed close to his tent by Panthers; and in the Bhagulpore district he has known many instances of human beings having been killed by them, old women being the chief victims, some of whom were even taken out of their huts. It is the form usually found in Bengal, and apparently extends its range through Western Asia as far as the Caucasus, and is common in the mountainous districts of Afghanistan. Sir Walter Elliot says that the "fur of the Honiga (by which name this animal is known) is shorter and closer than that of the small variety. The most strongly marked difference of character that I observed was in the skulls, that of the Honiga being larger and more pointed, with a ridge running along the occiput and much developed for the attachment of the muscles of the neck. If this character is permanent, it will afford a good ground of distinction.

In reference to this I find that the differences in the skull mentioned above do not exist in all the crania observed, at least in an equal degree; for some have the crest much less developed than others, caused perhaps by age or sex; and therefore, although two races are recognizable in adult animals of these Leopards, as I have already pointed out, yet I do not consider that there are two species, since there really does not seem to exist any tangible constant character upon

which to found a specific difference.

Sir Walter Elliot gives the following as the dimensions of the large animal: Length of head and body 4, to 5 feet, tail 2 to 3 feet. A fine male killed near Mhow in 1854 measured 4 feet 9 inches to root of tail, which was 3 feet 2 inches long, making a total of 7 feet 11 inches. In 1873 there was a large Leopard from Algeria living in the menagerie of the Jardin des Plantes, Paris, presented by Marshal MacMahon. It was remarkable for its colour, which was a chestnutbrown covered with exceedingly small black spots. It was apparently quite old, and possessed the large bony head, dewlap, and heavy body characteristic of the large form. The tail was long and darker than the body, with the markings closer

This beautiful and graceful creature is generally distributed at the present day in Africa, India, and Asia, as well as in the islands of Sumatra and Java. It varies somewhat in the colour of its fur, and also in size, while individuals from northern climes, like the Tigers from the same high latitudes, possess a long hairy coat, quite different from the short smooth fur of their southern brethren. Like all the Cat tribe, the Leopard has great patience and perseverance whilst seeking its prey, which it seizes by suddenly springing upon it from some ambush, and tearing it to the ground by the powerful claws. It preys upon almost any animal that it can overcome, such as sheep, goats, deer, monkeys, peafowl, and dogs: for the last-named it seems to have a special liking, having been known to enter a house and seize a bull-dog that was chained to its master's bed; and Jerdon states that at Manantoddy, in the Wynaad, every dog in the station was carried off, many in broad daylight. The Leopard is cruel in disposition, and to gratify its blood-thirsty propensity will kill many more victims than it can possibly devour at once. In winter it becomes very bold, probably incited by hunger, and comes out into the roads in some of the hill-stations in India and seizes the dogs. This creature is very quick in its movements, and climbs trees with facility, frequently taking refuge in the branches when closely pursued. It is asserted that it dislikes water, and will not readily swim, and therefore is not often found on small islands. It is very fearless; there are many recorded instances of its attacking man; and its great activity, strong teeth, and claws render it at all times a very formidable antagonist. It dwells chiefly in forests, though at times coming upon open ground. Sometimes a Leopard becomes a "man-eater;" and then he is said to be a far more terrible scourge than the Tiger. Captain Forsyth states that in 1858 a man-killing Leopard devastated the northern part of the Seoni district, killing nearly one hundred persons before he was shot. He never ate the bodies, but merely lapped the blood from the throat; and his plan was either to steal into a house at night and strangle some sleeper in his bed, or to climb into the platforms from which watchers guard their fields from deer, and drag his victim from them.

This species is the possessor of many synonyms, as names have been given by different authors to specimens varying in colour, size, or a pattern of spots slightly changed from what may have been considered the typical style. Thus, in 1856, M. Valenciennes described a faded skin of this animal as F. pacilura. This is now in the Paris Museum; and I am indebted to Prof. A. Milne-Edwards for the opportunity of examining the type. I do not regard it as a distinct

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species; and it does not appear to me that any one of the varieties which has been procured of the Leopard is entitled to a separate rank; they are all only such forms as naturally would occur among individuals of any species of Cats possessed

M. Alphonse Milne-Edwards has given in his work (Recherches pour servir à l'histoire naturelle des Mammiferes y a minute account of the skins of the specimens described by him as Felis fontanieri, contained in the Paris Museum, and also figures of the animal and of the skull. The chief characteristic relied upon in the skins to separate the examples specifically from Felis pardus is, that in one of the specimens, considered adult, the greater number of the black spots which form the rosettes, instead of being separated as in the usual style of Leopards, are confluent, and form complete rings like a Jaguar's, and also that the fulvous ground-colour thus enclosed does not present, as in the last, the black central spot; upon the thighs, however, these black spots no longer form rings. In a younger individual, of which a figure is also given, the above peculiarity is less distinct, and the rosettes are mixed up with a great number of irregular black spots. The skull is remarked upon chiefly on account of its curved upper outline from the end of the nasal bones to the foramen magnum. I examined carefully these specimens described by M. Milne-Edwards, and was enabled also, by the kindness of Prof. Gervais, to inspect the skull. The fur of all the animals is, as I have already stated, very long; and therefore the markings are rather indistinct, except on the back and hindquarters of the oldest individual, the rest presenting rather a confused appearance. In this respect the figures given by the artist of M. Milne-Edwards do not accurately represent the animal; for, from his plate, it might naturally be supposed that it was a short-furred, smooth-coated creature-which is quite the reverse of the fact. Now, in the longhaired specimens of Felis tigris from Siberia, the markings are as different in their style from those of Indian animals of this species as are these Leopards from southern specimens. This, I conceive, results simply from the extraordinary length of the fur, which permits the hair to be much ruffled, and some of the markings in M. Milne-Edwards's specimens thereby run into one another (for all the black spots are not confluent, but some are divided by yellowish hairs, as in other Leopards); and thus they present a very different appearance from their smooth-coated relatives. therefore could not see any thing in the skins (mindful of the similar coats of northern Tigers) which would lead me to look upon them as other than those of animals of the ordinary Felis pardus clothed in a warmer coat than usually seen, to enable them to live amid the snow and resist the severe climate of the far northern region in which they dwell. The younger specimen is very different in appearance from the more adult one. The hair is equally long; the spots are blackish brown instead of brown, not confluent, and so broken up and confused that they seem all mingled together in an inextricable mass, and give no idea of any pattern. It is only on the hindquarters and legs that the spots are distinctly visible, those on the first being generally separate around a buff centre, as in ordinary Leopards, and those on the legs black, without any light central spot. The tails of the two specimens are very different :- that of the adult being whitish. or yellowish white, partly ringed with black towards the tip, but spotted like the body near the root; that of the younger being buff at the root, dirty white towards the tip, spotted with reddish brown, the spots near the root having light centres, the rest being blotches or incomplete rings. It will thus be seen that the styles of marking of even these two animals are very different; and it may fairly be supposed that most specimens from the same locality would also present other variations in the arrangement as well as colour of the spots or rosettes.

The outline of the skull is more round than perhaps is usually seen in those of Leopards generally; but it must be borne in mind that the skulls of all the Felidæ vary one from another in a remarkable degree, caused by age, sex, and individual peculiarities; so that it is almost impossible to obtain two, even of the same species, exactly alike; and therefore I do not attach that immense importance to their characteristics which some do, believing that, in the matter of determining the specific value of any individual, they are often as apt to mislead as they are to furnish material for a correct opinion to be formed. Mr. Busk made comparisons between the skulls of the northern and southern Leopards brought to England by Mr. Swinhoe, and found that there was no appreciable difference between them-certainly none sufficient to create specific distinctness. In a Table of measurements (given in the same paper) of skulls of the so-called F. fontanieri, and some of Leopards from Northern and Southern China as well as from India, the differences exhibited were frequently greater between the Indian examples than between the F. fontanieri and the other specimens from North China. I have examined carefully the skulls of M. Milne-Edwards's specimens. One is that of quite a young animal, and imperfect; the other belongs to a more adult individual. The characters pointed out as of sufficient importance to create a specific rank I do not find

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to be peculiarly restricted to these skulls, but common to those of Leopards from other localities. In the Paris Museum is a skull that belonged to a Leopard from Morocco, which is nearly identical with the Chinese specimen. It is not quite so arched in its upper border, is apparently as deeply notched on the posterior border of the palate within the tubercular teeth; and the opening of the posterior nares, though not so wide, is not any longer. The differences observable between these two skulls from such distant localities are such as might with perfect propriety be attributed to age or sex; and they resemble each other to a much greater degree than would almost any other two crania of Leopards which were procured at one place and selected at haphazard from a series. It is very evident that no species of Cat can be satisfactorily established as distinct, when closely allied to some other species, until a large series of skulls has been obtained, all of which may possess characters in common and not to be found in the skull of another species; and with these there would probably be present a style of coloration in the fur not met with in any other animal. The specimens of F. fontanieri, now in the Paris Museum, I consider to be the same as the F. japonensis of Gray, determined by that naturalist from an imperfect skin in the British Museum, which was stated to have come from Japan. This, however, is probably an error, as no Leopard is known to inhabit that country; but if this form should eventually prove to have some valid claim to be considered distinct, Gray's name, although rather inappropriate, would have the priority. The Leopardus chinemas of Gray (l. c.) is also, I believe the same as the style called F. fontanieri, the figure of the skull given being almost identical with that in Professor Milne-Edwards's 'Recherches,' Specimens of F. leopardus from Java are smaller than those from India and Asia, much darker in their ground-colour, and their spots are also more intensely black. One which I saw in the Menagerie at Antwerp in 1871 was conspicuous for its small size, though apparently adult, and also for its dark colour. Leopards from Persia also possess very long hair, like those from Northern China, with a tail slightly inclined to be bushy and resembling that of Felis uncia and the colour of the body generally much

General colour varying from pale fawn to a rich buff, graduating into pure white upon the throat, front of neck, belly, and inside of legs. Head and body spotted throughout with dark brown or black; the spots on the back and sides arranged in a mire of broken rings, similar to those of a Jagan, but without the small spot in the entert. The spots on the breast and belly, as yell as those on the legs, are solid (not arranged in rings), and blacker than those on other parts of the body. Base of eans behind black, jut beld. Tail long, sometimes slightly back, buff above, spotted in broken rings like the back, white body, with solid black spots. The size of the broken rings varies greatly in different individuals, as does also behind the spots; for while some specimens exhibit these as large as a Jagara's, others preser very small, almost minute spots. In examples of this kind the skin is much more profusely covered than is the case with those having larger spots. The length of the fur also varies, according as the animals come from a cold or warm climate; and the hair of cubs is smally longer than is that of the adults.

In some Leopard-skulls the masal process of the premaxilla extends upwards to almost half the length of the masal, and the processes of the frontal bone reversely descend a short distance downwards alongside the mash. This, however, varies greatly among individuals. Some craim also have a high crest, extending from the mid-frontal to the supraceipital; others have merely an indication of this, while in others again there is nothing of it whatever. This peculiarity does not seem to belong to either age or locality, and cannot be regardles of only specific value. The profile or lateral outline of the skulls also varies greatly, some being; very much more arched than others; and in size the craim themselves of the adults are very dissimilar. The meal orifices are slightly heart-lapped; and the mash hones are usually broad attendredly, but it is goine specimens narrow rapidly towards their articulation with the frontal bone, and extend beyond the articulation of the processes of the maxilla. The lower outline of the runns of the inferior maxilla is usually strongly at Aldroigh às some there is a slight corner moder.

Fosil remains of the Leopard have been obtained in various parts of Europe. They apparently belonged to both the large and the small race, and do not present any characters to indicate a species distinct from that now living. These bones prove that in Pelsacener times the Leoparis ranged over a great part, if not the whole, of Western Europe and part of Great Britain, passing into the last-annel country over what is now the English Channel, and doubtless found a sufficiency of food among the deep know, &c. that were then numerous in Somenetakine. In England, however, the animal appears to have been rare; for the remains that have been found up to the present time consist only of some canines, together with an ulm. four, and two mentatrasis.





FELIS DIARDI.

THE CLOUDED TIGER.

- FELIS DIARDI, Desmoul Diet. Class. (1823) vol. iii. p. 492. sp. 10.—Cuv. Ossem. Foss. vol. iv. p. 437.—Fisch. Syn. Mamm. (1829) p. 206. sp. 19.—Svaim. Anim. Menag. p. 130 (1838).—Blyth, Proc. Zool. Soc (1863) p. 183. sp. 7.—Jerd. Mamm. Ind. (1867) p. 102. sp. 107.
- FELIS MACROCELIS, Vig. & Hord. Zool. Journ. (1825) vol. i. p. 542—Tenna Mon. Manus. (1827) vol. i. p. 192—Leos. Man. Manus. (1827) p. 190. sp. 566—Felos. Syn. Manus. (1829) p. 201. sp. 8–Vig. Men. Raff. (1820) p. 656—Leos. Nover. Tah. Riga. Azim. (1822) p. 22 sp. 493—Gerr. Hist. Xat. Manus. (1825) p. 81—Holg. Journ. Asist. Soc. Beng. vol. si. p. p. 814—Jard. Nat. Lifer. vol. xvi. p. 122, pl. ix.—Swinh. Proc. Zool. Sec. (1879) p. 229, 237, 628, sp. 388—David. Nover. Archiv. Mas. Paris, (1871) vol. si. p. 228—Blyl. (Cat. Mana. & Britsh Brann. (1875) p. 27 sp. 617).
- FELIS NEBULOSA, Vig. & Horsf. Zool. Journ. (1825) vol. i. p. 551.—Griff. Anim. King. (1827) p. 450, pl.—Temm. Mon. Mamm. Append. p. 250.—F. Cuv. & St.-Hill, Hist. Mamm. (1829) vol. ii. pl. 120.—Swain. Anim. Menag. (1838) p. 121.
- TIGRE ONDULÉ, Temm. Mon. Mamm. (1827) Append. vol. i. p. 257.
- RIMAU DAHAN, Raffles, Trans. Linn. Soc. vol. xiii. p. 250.
- FELIS MACROCELOIDES, Hodg. Cale. Journ. Nat. Hist. vol. iv. p. 286.—Horsf. Ann. & Mag. Nat. Hist., n. ser. (1854) vol. xvi. p. 105.—
 Id. Proc. Zool. Soc. (1856) p. 395, sp. 18.—Gray, Cat. Hodg. Coll. Mamm. Brit. Mus. (1846) p. 5, (1863) p. 3. sp. 28.
- PANTHERA (UNCIA) MACROCELIS, Severtz. Rev. Mag. Zool. (1858) p. 387.
- LEOPARDUS BRACHYURUS, Swinh. Proc. Zool. Soc. (1862) p. 352, t. 43.
- FELIS BRACHYURA, Blyth, Proc. Zool. Soc. (1863) p. 183. sp. 9.
- NEOFELIS BRACHYURUS, Gray, Proc. Zool. Soc. (1867) p. 266,-Id. Cat. Carn. Mamm. (1869) p. 14.
- NEOFELIS MACROCELIS, Gray, Proc. Zool. Soc. (1867) p. 266, fig. 3 (skull).—Id. Cat. Carn. Mamm. (1869) p. 13, fig. 3 (skull).
- PANTHERA MACROCELIS, Fitzin. Sitzungsber. Akad. Wiss. Wien, (1868) lviii. p. 483.
- PANTHERA NEBULOSA, id. ibid. p. 485.
- PANTHERA DIARDI, id. ibid. p. 486.
- LEOPARDUS MACROCELIS, Swinh. Nat. Hist. Hainan, (1870) p. 7.

Hab. Mountainous parts of South-east Asia, with the islands of Sumatra and Borneo (Повозом). Formosa, Hainan (Swinnor). Moupin (David).

The range of this handsome animal is very extensive, as it is found in the islands of Borneo and Sumatra, through the Malayan peninsula, into Sikkim, Nepaul, Burmah; also in the Himalayas, at an elevation of from 5000 to 10,000 feet, and also in Thibet. It is likewise a native of Hainan and Formosa. The animal from the last-named island was described by Mr. Swinhoe as distinct (l. c.) under the name of Leopardus brachyarus, on account of the shortness of the tail. This member he afterwards discovered varied greatly among individuals; and as it was the character upon which the species was founded, he referred it back to the present one, of which he considered it a small race. It is not improbable that in a series of specimens from Formosa some would be found to equal in size those of the continent. The Clouded Tiger is generally known among naturalists as the Felis macrocelis usually ascribed to Temminck, as given by that author in his Monograph of the Mammalia; but this name appears to have been previously bestowed upon this species by Vigors and Horsfield (l. c.). Desmoulins (l. c.) had four years previously described the animal as F. diardi, which name, having a prior right, is the one the species should bear. Hodgson called the examples from Nepaul F. macroceloides on account of their rather smaller size and slightly different markings. There is too much variation among individuals of this species, as is the case in all the members of this family, for a separate form to be established upon such slight grounds. Blyth, in the 'Mammals and Birds of Burma,' says "that as this animal increases in age, its ground-colour becomes more fulvous, and there is much individual variation in its markings." It will be seen by the list of synonyms quoted above that this species has been the recipient of many names, and also been assigned to a considerable number of genera. Although I have examined a tolerably large series of both skins and skulls, I have never seen any that seemed to require

FELIS DIARDI.

a separate specific rank, much less a generic one. The Clouded Tiger is a tree-loving animal; and in Sumatra, where it is not uncommon, individuals are said to be found generally in the vicinity of villages, but are not dreaded by the natives, except in so far as they may destroy their poultry. Railles says it is asserted that they sleep, and often lie in wait for their prey, on trees, whence they derive their name of Dahan, which signifies the fork of a tree. Jerdon obtained a young one from the neighbourhood of Darjeeling; and it became very tame and playful. According to the Lepchas this Cat is very destructive to sheep, goats, pigs, and dogs. Two individuals were obtained on the banks of the Bencoolen river, in Sumatra, and passed into the possession of Sir Stamford Raffles. They were remarkable for their playfulness (no kittens could be more gentle), and showed great pleasure when noticed, throwing themselves on their backs, and expressing delight when rubbed or tickled. One was brought to England; and on board ship it used to play with a small dog, always exhibiting the greatest care and tenderness towards its little companion whenever they came into contact. It was placed in Exeter Change, in London, and at first, frightened by the noise and number of people, showed symptoms of ferocity, but soon became accustomed to its new surroundings, and was again as mild and tractable as before. In its movements the Clouded Tiger is very quick and graceful; and the individual above mentioned was accustomed to jump and twist itself about in the cage, like a squirrel, its tail all the time being extended and showing to great advantage This species has at different times been an inmate of the menageries of various zoological gardens, and, whenever branches of trees were placed in the enclosure, was accustomed to amuse itself upon them, and was remarkable for the grace and suppleness of its movements.

guesce and suppenses or sits movements.

For short, atther coarse. General colour of entire body rich buff in some specimens, darker in others. Top of bond spotted with black. Two broad black lines down back of neck, two across checks, and two across the threat. Body covered with large piregular patches, darker in hose than the general colour of the fire, each one bordered on three sides with black, giving to the skin a marbded appearance. Fore legs, hind quarters, and legs covered with large black spots, as is also the belly. Tail long, irregularly spotted and ringed with black on a ground-colour like that of the body. Back of ears black with a buff spot near the centre. Other specimens have the ground-colour greyish, and the patches on the body dark grizzly grey. No two examples causeful silks.

Eatie length 38 inches, tail 30 inches.

The skull of this species is long and narrow, and remarkable for its greatly lengthened canines. The very clongate and laterally compressed face is nearly on a level with the forehead. Neash rather long, only meeting the maxillas in their central portion, being separated by the processes of the premarking anteriority, and by those of the frontable posteriority. The frontal processes of the maxilla are square at their upper posterior ends, and are on a line with those of the nasslate interorbital space very narrow. Brain-case small, with a well-developed central ridge or creek. Lower outline of ramus straight for nearly its entire length, curring downwards slightly at the angle. Upper canines much clongated, slightly curved, with a sharp entities edge on their posterior side.



JWelf & JSmit del at hith

FELIS DIARDI

M&NHarkart inn

FELIS MARMORATA.

THE LITTLE MARBLED TIGER.

FELIS DIARDI, Jard. Nat. Libr. vol. xvi. p. 221, pls. xxi., xxii. (nec Desmoulins).

FELIS MARMORATA, Martin, Proc. Zool. Soc. (1836) p. 107.—Less. Nouv. Tab. Règn. Anim. (1842) p. 52. sp. 520.—Blyth, Proc. Zool. Soc. (1863) p. 183. sp. 8.—Jerd. Mamm. Ind. (1867) p. 104. sp. 109.

FELIS LONGICAUDATUS, Blainv. Ostéog. (1831-64) t. 9.

LEOPARDUS MARMORATUS, J. E. Gray, Cat. Mamm. Brit. Mus. (1842) p. 42.

FELIS OGILBI, Hodgs. Calc. Journ. Nat. Hist. vol. viii. (1846) p. 44.

FELIS DUVAUCELLI, Hodgs. MS. (1852).

UNCIA CHARLTONI, Gray, Ann. Mag. Nat. Hist. (1854) vol. xiv. p. 394.

FELIS CHARLTONI, Horsf. Proc. Zool. Soc. (1856) p. 396, sp. 20.

FELIS (PARDOFELIS) MARMORATA, Severtz. Rev. et Mag. Zool. (1858) p. 387.

LEOPARDUS DOSUL, Gray, Cat. Hodgs. Coll. Mamm. Brit. Mus. (1863) p. 3. sp. 26.

CATOLYNX MARMORATA, Gray, Proc. Zool. Soc. (1867) p. 267.—Id. Cat. Cars. Mamm. (1869) p. 16. sp. 1.

CATOLYNX CHARLTONI, Gray, Proc. Zool. Soc. (1867) p. 268.—Id. Cat. Carn. Mamm. (1869) p. 16. sp. 2.

PANTHERA MARMORATA, Fitzin. Akad. Wiss. Wien, (1868) Iviii. p. 488.

HAB. South-eastern Asia; Sumatra; Borneo.

Tuts hundsome animal, although of smaller size, bears some recemblance to Rela disord in the shape and disposition of its markings. It shoulks the species to which I have compared it, possesses a long-thick furry train and a lengthened body meanted upon rather short stort legs. Many names have been bestored upon it, as a gloton or the list of synonyma given above will usatify. It was first noticed by Jacofine (who, however, called it disord; confineding it with that species), and was afterwards described as distinct by Martin (t,c) under the name it now bears. Hodgeon, in his manuscript notes, gave to a specimen of this Cas from Naqual the name of denouvedli; and J. E. Gray later described the same as charloni (t,c). He was not, however, quite sum of the validity of his species, as, or comparing it with P. Amessowstein in his "Caslages of Contrivorous Mammalic," he says that "they may be only local varieties," maning, I suppose, that his animal may be a "local variety of P. morassowte. There examined his specimens in the British Museum, and consider them undoubstelly to represent but one appetes. I have been mable to find any published secount of the habits of this Cat, but imagine they would be the same as those of its near relative,

Fur very soft and long. General colour rufous, brightest on the head and flanks, mottled and irregularly marked with black y upon the back and sides upparently with lines running elengthwise, but on the loins and lower part of legs with black spots, decreasing in size as they go towards the feet. Threat and present crossed with black lines. Belly yellowish white, spotted with dark hrown. Inside of legs crossed with two or more blackish-drown bars. Back of ears black. Tail very long, basky, greyish buff, freegolarly marked on top and sides with black spots and bars. Underneath yellowish buff. The tail varies in length among individuals. Length from nose to root of tail 25₁ inches, rail 345 inches.

The skull presents a short face and high forehead. Nasals broad, extending beyond the processes of maxillas, and rounded at their articulation with the frontal bone. Nasal aperture heart-haped. Processes of prefrontals and premarallies very long and slender, almost meeting, and separating the maxillas from the masks. In this character this species is like the Lynxes. Orbits incomplete in some specimens; in others they are complete. Brain-case well developed and rounded. Interodatial space narrow. Infarnorbital formen large and round. Auditory bulle large and oblong in shape. Mastoid formina present merely a linear opening. Lower outline of inferior ramus slightly curving upwards at symphysis. Canines rather stout. First upper premolar very small, and the first lower premolar not prominent. Petrgyoid fossa well developed.



Wolf & J Smit, del et lith

FELIS MARMORATA

M&N.Hanhart imp

FELIS MANUL.

PALLAS'S THIBETAN CAT.

FELIS MANUL, Pall. Reis, durch versch. Prov. Russ. Reichs, (1772-73) p. 692, sp. 2.—Schrob. Saugeth. (1778) Tb. iii. p. 406.—Gmol. Spin. Nat. (1788) vol. 1; pl. 1, p. 81, sp. 13.—Tall. Voy. Russ. Asis, (1783) App. vol. v. p. 89, sp. 1.—Id. Zoog. Romo-tain. (1811) p. 106.—Sch. Zoog. Russ. Pall. Hodge, Coll. Mann. Brit. Mus. (1963) p. 4. sp. 33—Blyth, Proc. Zool. Soc. (1862) p. 185. sp. 17.—Murray, Groge. Bistr. Mann. (1868) p. 10. eFery, Proc. Zool. Soc. (1867) pp. 275, 575.—Id. Cat. Carn. Mann. (1869) p. 30. sp. 32.—Alph. Milns-Edv. Recherch. Mann. (1872) p. 235.—Blad Proc. Zool. Soc. (1875) p. 435.

FELIS NIGRIPECTUS, Hodgs. MS.

FELIS (OCTALOBUS) MANUL, Severtz. Rev. Mag. Zool. (1858) p. 386.

HAB. Thibet and Eastern Asia; Amurland: common in the Tarini valley and Lob-Nor (PREJEVALSKY).

This very distinct and rather peculiar species was first made known to naturalists by Pallas (t. c.). It is a native of Northern Asia, where it is not uncommon, and preys upon the small quadrupeds frequenting the same high latitudes in which it lives. In its long and curiously marked fur and bushy fox-like tail, it presents no resemblance to any other species of this family. In museums it is rare, and but few specimens are found in the collections of Western Europe; so that it is unknown whether or not individuals vary to any extent from each other. It is, however, probable that they do, especially in the colour of the fur, if not, indeed, also in their markings. It is a small animal, and also a handsome one, as a glance at the Plate will prove; but, unfortunately, little more is known about it, nothing especial regarding its habits having been yet published by the travellers who have penetrated the countries in which it dwells. The range of this species is extensive, and appears to be from Siberia, Thibet, and Mongolia on the north, to the range of the Himalayas, south of which I am not aware that it has ever been found. It was killed near the great wall of Pekin by M. Fontanier, and the specimen sent to the Paris Museum. It was said by the last-named gentleman to prey upon spermophiles and other small quadrupeds. It is represented among Mr. Hodgson's drawings of the animals of Nepaul and Thibet as Felis nigripectus; but as all the specimens he sent to the British Museum were from Thibet, it probably has never been observed elsewhere than to the north of the Himalayas.

Fur soft, long, rufous grey, dark grey on head, cheek, and back. Top of head spotted with black. Across the back and loins are several indistinct black lines. Shoulders inclined to rufous. Breast dark brown; chin and throat whitish. Underparts yellowish white. Hind legs deep buff. Tail long and bushy, same colour as the body, with six narrow rings of black, and the tip, for about an inch, also black. Specimen in Paris Museum. Length from nose to root of tail 19 inches, tail 91 inches.

The skull is chiefly noticeable for its width and the prominence of the interorbital region in comparison with the nasal. The nasal bones are very narrow for two thirds their posterior length, and then rapidly widen in front. Also the temporal crests are very far apart.



FELIS PAJEROS

PAMPAS CAT.

FELIS PAJEROS, Dem. Now. Diet. Hist. Nat. (1816) p. 114.—Cer. Ossen. Foss. (1829) vol. ir. p. 439.—Less. Most. Mamm. (1827) p. 135.
sp. 595.—Fisch. Syn. Mamm. (1827) p. 213.—Azars, Hist. Gaud. Parag. (1838) p. 345.—Less. Comp. Buff. (1839) vol. ir. p. 411.—
Darw. Voy. Beng. Mamm. (1839) p. 15, pt. ir.—Less. Now. Tab. Rign. Asim. (1849) p. 57. sp. 552.—D'Ochig, Voy. Amér. Mérid. (1847) p. 22.—Gerv. Hist. Nat. Mamm. (1855) p. 91.—Sclat. Proc. Zool. Soc. (1868) p. 530.—J. E. Gray, Cat. Carn. Mamm. (1869) p. 18. sp. 9.—Philippi, Wiegm. Archiv, (1873) p. 8.

LE CHAT PAMPA, Temm. Mon. Mamm. (1827) vol. i. p. 156. FELIS LINEATA, Swains. Anim. Menag. (1838) p. 128.

LYNCHAILURUS PAGEROS, Severtz. Rev. Mag. Zool. (1858) p. 386.

PAJEROS PAMPANUS, J. E. Gray, Proc. Zool. Soc. (1867) p. 270.—Id. Ann. & Mag. Nat. Hist. (1874) vol. xiv. p. 353. sp. 15.

PANTHERA PAJEROS, Fitzin. Sitzungsb. Akad. Wiss. Wien, (1869) lix. p. 276. FELIS PASSERUM, Sciat. Rev. List Vert. Anim. (1872) p. 40.

HAB. Buenos Ayres (AZARA); Patagonia (D'ORBIGNY); Straits of Magellan (DARWIN).

According to Darwin this species takes its name from "paja," the Spanish name for straw, from its habit of frequenting reeds; and Azara says that the natives call it gato pajero, because it lives on the plains, concealing itself in the jungles, and does not enter the woods. The latter author states it is found as far north as 35' south latitude; and Darwin says that he has reason to believe that it is found as far south as the Straits of Magellan, while D'Orbigny met with it only between 35° and 45° south latitude, in the small woods of the desert-region of Patagonia. Both Azara and D'Orbigny speak of it as rather common on the river Negro. From the above statements it would seem that this Cat has a range of about 1400 miles in a north and south direction. Azara states that he once took from a female a single young upon which the hair had already commenced to grow. It is said, however, that two, and even three, are usually brought forth at a time. The last-mentioned author says that the principal food of this species is guinea-pigs. In the synonymy of this animal there is not any confusion, it fortunately only having received two names, so far as I have been able to discover. It varies slightly in the colouring of its fur, the chief differences being in the conspicuous markings of the breast and legs, some having these red, others black or dark brown. The two styles are well shown in the Plate.

General colour silvery grey upon the body, with narrow lines of rufous brown, placed rather widely apart, running diagonally along the back, sides, and loins; the line on the centre of the back darker than those on the sides. Head silvery grey, inclined to rufous on the occiput. Two faint rufous stripes from behind and below the eyes reach beneath the ears; these last are dark rufous behind. Throat, breast, belly, and legs white, all of them, except the first, conspicuously crossed with bright rufous bars, broadest and deepest on the breast; two bars on the upper part of each fore leg inclined to blackish chestnut. Tail long, dark grey, many of the hairs tipped with black. (This is the usual style.) Entire length 25 to 26 inches, tail 12.

The young are similar in colour and markings to the adults.

Another stage of pelage is dark grey, without any stripes visible upon the body, the bars on the breast, belly, and legs being black instead of rufous. The tips of the ears behind also black. Tail long, thickly furred and grey, like the body. (Specimen in Paris Museum.)

The skull of this species has a very short face and high forehead. The nasal bones are short, narrow, and contract to a point at their articulation with the frontal bone; interorbital space wide, and the brain-case large and rounded, the squamosals, when the skull is viewed from above, swelling prominently outwards; orbits incomplete; processes of the maxilla rounded at their upper ends. Upper outline of skull much rounded, the nasals descending quite abruptly from the prefrontal. Outline of ramus perfectly straight from symphysis to angle. Superior canines rather long, with a prominent sharp edge on their posterior sides, and two grooves on their outer face, the posterior one being broad and flat. Auditory bullae large and prominent; zygoma rather broad, arching well outwards; premaxillas rather broad, with their processes extending well up the sides of the nasals, nearly meeting those of the prefontal.



JWHEAT SHILL AREAL

FELIS PAJEROS.

FELIS COLOCOLO.

MOLINA'S GUIANA CAT.

FELIS COLOCOLO, Malina, Sagg. Stor. del Chili (1810, 2nd ed.) p. 245, sp. 7.—F. Cav. Hist. Mamm. (1823) pl. 142.—Team. Mon. Minup. (1927) vol. I. App. 259.—U. Smith, Grid, Ania, King, voll by p. 257.—Lee, Chapp. Bell (1939) vol. P. p. 100.—B. New, Tab. Riege.
Asian, (1937) vol. I. App. 259.—U. Smith, Grid, Ania, King, voll by p. 257.—Lee, Chapp. Bell (1939) vol. p. 10.—Pallippi, Weign, Archiv, crates Heft (1976) p. ft, (1879). p. 8, pl. iii. fig. 42.—Gray, Ann. & Mag. Nat. Hist. (1874) vol. xiii. p. 259.

FELIS COLOCOLLA, Desm. Nove. Dict. Hist. Nat. (1816) p. 115.—Legs. Man. Mamm. (1827) p. 193. sp. 519.—Gray, Proc. Zool. Soc. (1867) p. 272.—Id. Cat. Carn. Mamm. (1869) p. 23. sp. 10.

FEEIS COLOCOLLO, Fisch. Syn. Mamm. (1849) p. 204. sp. 15.—Minart, The Cat, (1881) p. 413. FELIS LINEATA, Swains, Anim. Menag. (1838) p. 128.

CATUS STRIGILATA, Wagn, Schreb, Sangeth, Supp. B. ii, Sp. 546, no. 44, DENDRAILURUS STRIGILATA, Severtz. Rev. Mag. Zool. (1858) p. 386.

FELIS JACOBITA, Cornalia, Mem. Soc. Ital. Scien. Nat. (1865) vol. i. pl.

PANTHERA STRIGILATA, Fitzia, Sitzgeb, Akad, Wiss, Wien, (1869) lix. p. 274.

MOLINA described this Cat in the work quoted above. Very little is known of it; and but one specimen presumed to belong to the species is, so far as I am aware, contained in collections. This example is in the Museum at Milan, and was described and figured by Prof. Cornalia as above quoted, under the name of F. jacobita. It is from a portrait of this specimen that the figure in the Plate is drawn. Smith, in Griffith's 'Animal Kingdom,' gives the following account of this animal. "The specimen I have named conditionally Colocolo, from Molina, seems to terminate this little group, and by the character of its markings to approximate to the Servals and Tiger-cats of the Old World. It does not appear certain, though it may be probable, that this is the animal Molina indicated as the Colocolo, as he calls the marks spots, and not streaks; at least the word is so translated. This tience animal was shot in the interior of Guiana by an officer of Lewinstein's riflemen, and by him stuffed and sent to England for His Royal Highness, the Duke of York, but probably never reached its destination. A whimsical occurrence took place with it. The gentleman who had shot it, placed it on the awning of the boat to air, as he was descending the river Paramaribo. The boat often passed under the branches of large trees, which overhung the river, and on which were the restingplaces of numerous monkeys, sometimes langing to the extremest branches above the water. Although the vessel would on other occasions excite but little attention, no sooner was the stuffed specimen in sight than the whole community would troop off with prodigious screams and howlings. It was, of course, surmised from the excessive community of these animals, that this species of Cat must be an edge-sering fathers. "Phillippi [6, 9] gives recommendated description of the shall of this named and engineer it lave news comparative description of the shall of this named and engineer it lave news comparative description of the shall of the named and engineer it lave news compared to the shall of P. orderdo, and therefore would refer those who desire to investigate (this, part of the skeleton to the artificial to Weignmann's Artificial profession and the shall be a state of the skeleton to the artificial to Weignmann's Artificial profession and the shall be a state of the skeleton to the artificial to Weignmann's Artificial profession and the shall be a state of the skeleton to the shall be a state of the skeleton to the skeleton to the shall be a state of the skeleton to the shall be a state of the skeleton to the

General colour greyish white with broken black bars on top of head, back, and sides. The usual two lines across the cheeks, and three rather faint ones across the breast. Legs spotted sparsely with black. Tail rather long, with nine or ten black rings scattered along its entire length.

Mivart (L. c.) gives the following description of the skull :-

"The orbits not enclosed by bone. There is no first upper premolar. The upper true molar is visible when the skull is seen in profile. The infraorbital foramen is large. The skull is much clongated and depressed. The muzzle produced, and the upper surface of the snout markedly concave when the skull is looked at in profile. When the skull is seen from above, the prominence of the upper jaw causes part of the anterior palatine foramina to be distinctly visible. The nasals narrow very gradually backwards, and do not extend so far backwards as do the nasal processes of the maxillae." Prof. Mivart does not state where he saw the specimens described.

In size this species is about equal to the Domestic Cat. More specimens and fuller information of this Cat are needed before its true specific value can be determined. At present too little is known about it for a decided opinion to be formed.



FELIS YAGUARUNDI

THE YAGUARUNDI.

FELIS JAGUARONDI, Lacép. Œuvr. d'Azara, Atl. pl. x.—Fisch. Zoogu. (1814) p. 228.—Desm. Nouv. Dict. Hist. Nat. (1816) p. 113.—Cuv. Auto-analysis, Jacque (Leart - Alarr, All. pl. x—Frack Zooga, (1811)); 2782—Deam. News Dect. Hint. Nat. (1810) p. 1132—Gav. Oscare, Pass, (1824); vol. ip. 1, 948.—Pass, Mar. Bark J. (1824); p. 939—Gaff, alain, King, (1827) vol. ip. 1, 946.
—Temm. Men. Mann, (1827) vol. ip. 1, 910.—Leas. Man. Manna. (1827); p. 191. sp. 51.—Rengr. Zood. Journ. (1830) vol. vp. 450.
—Leas. Compl. Buff. (1893) vol. i. p. 100.—14. Nour. Tab. Biga. Anim. (1842); p. 51. sp. 5, 96.75.—Jack. Mar. Har vol. xi. p. 1, 345.

J. E. Gray, Kawasiey Menag. (1840) h. in—Gerr. Hist. Nat. Manna vol. ii. (1845) p. 91.—J. E. Gray, Proc. Zool. Soc. (1867) p. 272.—Id. Cat. Carn. Mamm. (1869) p. 23.

FELIS YAGOUAROUNDI, Desm. Mamm. (1820) p. 230. no. 361.

FELIS MEXICANA, Desm. (nec De Saussure) Nouv. Dict. Hist. Nat. (1816) vol. vi. p. 112.—Less. Nouv. Tab. Règn. Anim. (1842) pr 55, sp. 538.

FELIS UNICOLOR, Traill, Wern. Soc. vol. iii. p. 170?

FELIS DARWINII, Martin, Proc. Zool. Soc. (1837) p. 3.

LEOPARDUS YAGUARONDI, J. E. Gray, Cat. Mamm. Brit. Mus. (1842) p. 42.

FELIS CALOMITTI, Baird, Mamm. N. Amer. t. 74. fig. 2 (skull).

FELIS (HERPAILURUS) YAGUARUNDI, Severtz. Rev. Mag. Zool. (1858) p. 385.

FELIS YAGUARONDI, Tomes, Proc. Zool. Soc. (1861) p. 287.

PANTHERA YAGUARONDI, Fitzin. Sitzgsber. Akad. Wiss. Wien, (1869) lix. p. 638.

Hab. Mexico; Central America; South America to Paraguay.

This species is found from Mexico in the north, through Central America and South America, to Paraguay. It was procured by Azara in the last-named country and in the Guaranese Missions; and he says that the sexes resemble each other, the male being only a little larger. It did not venture into open places, but inhabited woods, thickets, and ditches. It climbs trees with facility, and passes a good deal of time in them. Whenever the opportunity is given, this species commits great destruction among poultry. The female is said to bring forth only two young in a year. It is also species comming great consensus among prompts, the estimate as a many coming must only two young in a year. It is allow stated that the Yaguarundi drops upon the backs of the Crewn surface and Ceresn nearesons, and does not loose its lold, although the deer gallop off at full speed, but eventually kills them. This, however, Azara believed to be true only of

young fawns. Representations are given in the Plate of the two styles of colouring exhibited by this species.

Fur short, rather harsh, entirely of a dark grey colour, lightest in hue on the belly. Some specimens incline to black Fur short, ration country, one was goty conset argumes in one on the outy. Some operation medius to said:
with a ration tings. In these last the white tips of the hairs are very complexous, particularly on the back, which is
often quite black. There are no markings anywhere visible upon the animal. The tail is very long, and of the same colour as the body. Entire length 27 inches, tail 17.

The skull is broad and long, with a rather lengthened face and narrow nasals. Interorbital space relatively wide, and the brain-case oblong, rounding prominently outwards. The skull in profile is nearly straight above, or only curving the brain-case omong, rounting promising standards. The action in prome is nearly strugin above, or only curving slightly downwards at the nasals. The premaxillas stand nearly upright; and their processes extend but a short distance between the maxillas and the nasals. The mandibular ramus curves slightly under the last molar, rising towards the



FELIS EYRA.

THE EYRA.

FELIS EYLA, Fielt, Zogen. (181) p. 288, sp. 13.—Dean. Nouv. Dict. Bist. Nat. (1816) p. 14.—Id. Manum. (1820) p. 231. no. 364.—Cev. Oness. Poss. (1820) vol. iv. p. 420.—Prinz Max. Beir: Naturg. Bread! Band. ii. (1820) p. 381.—Gefd. Anias. King. (1827) vol. ii. p. 487. p. 162. p. 162.

Carr, Mann. (1803) p. 22.—Penatrina, Archit Nat. xav. 1, p. 278.—Aiston, mol. Gent.-Amer. (1st CETRA, Tenn. Mon. Mann. (1932) Append. p. 265.
L'EVRA, Tenn. Mon. Mann. (1827) vol. ip. 156.
FELIS CATUS, var. g. EVRA, Leas. Nov. Tab. Righ. Anim. (1842) p. 54.
FELIS GIBERALURGS) EVRA, Severtz. Rev. Mag. Zool. (1858) p. 285.
FELIS UNICOLOR, Baird, Mann. N. Amer. t. 73, g. 2—Traill, Men. Wern. Acad. vol. iii. p. 478, pl. x.
PANTIFIRA EVRA, frain. Singlesch. And. Wiss. Wim. (1869) fix. p. 441.

HAB. Mexico; Central America; Guiana; Brazil; Paraguay.

Tuts graceful species has a very extensive range, having been met with in the State of Taumalipsis in Mexico, through Central America, into South America, on which continent it is found as far south as Paraguay; I am not arresured if ever lans been noticed west of the Andrean range. In form the Eyra is sheuler and more like the Polecant, six very quick and graceful in all its motions, and possesses a gentle disposition. Dr. Berlandiëre, who obtained Marxico, says that it is extensely rare there, and is found in the shrubbey growing along the basis of the Rio Granzed Marxico, says that it is extensely rare there, and is found in the shrubbey growing along the basis of the Rio Granzed of Marxico, says that is in the same transport of the species of t

in eatching birds. The fur was very soft.

Fur short. Entire body a rich bright red, darkest upon the back, lightest on the inside of the legs and on the belly.

Fur short. Entire body a rich bright red, darkest upon the back, lightest on the inside of the legs and on the belly.

No markings of any kind visible. Chin, throat, and breast deep rufous buff.

Tail very long, rich red like the back. The young are also red, but not quite of so rich a colour as the adults.

Length 2 feet 7 inches; tail 114 inches.

The shull is long, with a lengthened flee on a level with the forehead; assals are broad, and on a line with the processes of the maxillas at their articulation with the frontal bone. Processes of prefrontals and premaxillas separate the nassla and maxillas for nearly two thirds the length. Mexillas are slightly concerve on the side of the nassla, giving his portion a pixeled appearance. Orbits incomplete. Infrarebital foramen contracted, in one specimen almost square-shaped. Brain-case long and rounded. Auditory balles prominent, oblong; mastoid foramen of a triangular shape. Zygoma well arched. Canines moderate. Specimen described 1226, B. M.



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FELIS BADIA. THE BORNEAN RED CAT.

FELIS BADIA, J. E. Gray, Proc. Zool. Soc. (1874) p. 322, pl. 49.

HAB. Sarawak, Borneo (WALLACE).

Tuts species was described by Gray as above mentioned. It is a singular form to come from Borneo, being apparently nearest allied to the E. eyer of Central and South America; and if the skin were not so well authenticated, it might be supposed that an error had been made in the labitat. W. Gray says that Mr. Wallace, in 1866, sent to the British Museum the skin of this Cat from Sarawak, together with its skull. Nothing whatever is known regarding the animal beyond the single specimen mentioned above; and although so long a time has elapsed since it was obtained, no second example, so for at 1 am aware, has been procured.

General colour bright chestnut, paler beneath. Lower side of the terminal portion of the tail white, the white becoming wide and of a purer hue towards the tip, which has a black spot on the upper side. Ears blackish brown; inside pale brown. Sides of upper lip pale brown. A white stripe on side of the nose before the eye, and another under the eye. Two rather indistinct brown stripes across the checks. Chin, edge of lower jaw, and throat white.

Length from nose to root of tail about 20 inches; tail 14 inches. The skin is in such a mutilated state that it is almost impossible to give correct measurements; but the above are not far out.

The skull of this species in the British Museum is incomplete, as the entire occupital region is missing. It has rather broad massls, which are pointed at their articulation with the frontal bone, and extend considerably beyond the processes of the maxilles. There is also a comisderable depression at the symphysis, forming a grove along their entire length. The processes of the premaxilles are long, narrowing to a point, and reach nearly half the length of the massk, separating them forms the maxilles. The infmodribal formina are very large, round and open. Orbits incomplete. Brain-case very full and broad, flat on top, without any indication, in the portion that remains, of a ridge or crest. The lower orbits of the maxilles are longer to the state of the state



Walf & J Smit del et lith

FELIS BADIA.

MAN Shadood loss

FELIS TEMMINCKII.

TEMMINCK'S GOLDEN CAT.

- FELIS TEMMINCKII, Vig. & Horsf. Zool. Journ. (1828) vol. iii. p. 451.—Id. Mem. Raffl. (1830) p. 636.—Less. Compl. Buff. (1839) vol. i. p. 410.—Id. New. Tab. Regn. Anim. (1842) p. 55. sp. 536.—Blyth, Manun. & Birds, Burna, (1875) p. 28.
- FEIJS MOORMENSIS, Hodg. Proc. Zool. Soc. (1832) p. 10, (1834) p. 97.—Id. Journ. Asiat. Soc. Beng. vol. v. p. 998.—Id. Cale. Journ. Nat. Hist. vol. iv. p. 286.—Leas. Compl. Buff. (1839) vol. i. p. 410.—Henr. Cat. Mamm. Mus. E.-Ind. Co. (1831) p. 49. sp. 492.—Id. Proc. 200. Soc. (1840) p. 393, p. 10.—Elling, Proc. Zool. Soc. (1847) (1871) p. 739.
- LEOPARDUS MOORMENSIS, J. E. Gray, Cat. Mamm. Brit. Mus. (1842) p. 41.—Id. Cat. Hodg. Coll. Mamm. Brit. Mus. (1863) p. 4. sp. 29.
- FELIS MOORMENSIS, var. NIGRA, Horsf. Ann. & Mag. Nat. Hist., n. ser. vol. xvi. (1855) p. 105.
- FELIS (CATOPUMA) MOORMENSIS, Severtz, Rev. Mag. Zool. (1858) p. 387.
 FELIS NIGRESCENS, Hodg. Draw. Brit. Mus. (black var.)...-Gray, Cat. Hodg. Coll. Mamm. Brit. Mus. (1863) sp. 30. p. 4.
- FELIS MIGRESCENS, Hodg. Draw. Brit. Mus. (black var.).—Gray, Cat. Hodg. Con. samming. Con. samming. (1867) p. 815, pl. 36.—Jerd. Mamm. Ind. (1867) p. 815, pl. 36.—Jerd. Mamm. Ind. (1867)
- LEOPARDUS AURATUS, J. E. Gray, Proc. Zool. Soc. (1867) p. 265.—Id. Cat. Carn. Mamm. (1869) p. 12.
- PANTHERA MOORMENSIS, Fitzin. Sitzungsber. Akad. Wiss. Wien, lviii. (1868) p. 515.
- PANTHERA TEMMINCKII, id. ibid. p. 518.
- Hab. Nepaul and central hilly regions (Horsfeld). South-east Himalaya, Malayan peninsula, Sumatra, and probably Borneo (Blayth). Burma? (Masox).

TEMINICK's GOLDEN CAT was first described by Mesurs. Vigors and Horsfield (l.-c) from a young animal, and afterwards by Mr. Hodgeon (l.-c), who called it P. morrements; and by this latter name it has been generally known, Vigors's name of Framsieńchi kaving been cerelocked by nearly all extendsts. It is found in India from Nepsul and the Nogork-and Himalayas, through the Malayan peninsula, and in the island of Sumatra, and, according to Blyth, perhaps in Borneo, although 1 have not been able to ascertain that it is a native of the Instrumed island. Blyth says, in his 'Manumals and Birds of Borna,' that "Mason refers to an animal which he denominates the 'Piro-Clar' or 'Fire-Tiger' of the Bornanas,' and thinks this is very probably the present species, quoting as synonyms the P. mosorements, Hodge, and the P. cheyestéria; Fernm. The last, however, is a very distinct animal, and is a native of Africa. Mr. Hodgeon and as specimen of this Cat presented to him by the Prime Minister of Nipad. It was caught in a tree in the milat of an exceedingly dense forest. It hore confinement very tranquilly, and gave evident signs of a tractable indiposition and chereful unsuspicious temper; but as so offert was made to trans the creature, it always remained wild during the six months it lived after being englit, manifesting "considerable freceity, the approach to its eage of the large bloom of the considerable freceity, the approach to its eage of the large bloom of the considerable freceity, the approach to its eage of the large bloom of the considerable freceity, the approach to its eage of the large bloom of the considerable freceity, the approach to its eage of the large part of the state of the proposition of the proposition of the considerable freceity, the approach to its eage of the large part of the proposition of the very sufficient time to be roader touching them other than a very learnedous experiment.

Fur rather soft, full. Entire cost a deep rich red, unspotted, lighter on the belly and breast. Chin white, and a white stripe on the check. Underside of tail near the tip white. Back of ears black. Length of body 28 inches, tail it inches.

The skull of this Cat is long and narrow, presenting the appearance denominated "long-waited." The massla sure broad, pointed at their fronto-massl articulation, and do not reads to far as the processes of the maxilla. The last are also pointed. The processes of the prefrontals, and also those of the premardilas, are very long and slender and nearly meet, thus almost entirely separating the massla from the maxillas. Othis incomplete. Interorbial space nearrow. The benincase is long and arrow, with a vell-pronounced ridge or creat extending from the performatist to the supraccipital region. Auditory bulbe prominent, and both the massoid and external auditory forunina are large, and of a slightly oblong shape. Superior examines long and broad; and the molar series is well developed.



Will & J Smit del et lith

FELIS TEMMINCKII.

M&N Hanhart inp

FELIS PLANICEPS.

THE LITTLE MALAYAN RED CAT.

FELIS PLANICEPS, Vig. & Horsf. Zool. Journ. (1828) vol. iii. p. 450.—Less. Compl. Buff. (1839) vol. i. p. 410.—Blainv. Ostéogr. (1839-64) vol. ii. Alt. pls. ix, xix.—Less. Nouv. Tab. Règn. Anim. (1842) p. 55. sp. 535.—Blyth, Proc. Zool. Soc. (1863) p. 185.—J. E. Gray. Ann. Mar. Nat. Hile. (1874) vol. xiv. p. 35.

AILURINA PLANICEPS, Gerv. Hist. Nat. Mamm. tom. ii. (1855) p. 87.

FELIS (ICTAILURUS) PLANICEPS, Severtz, Rev. Mag. Zool. (1858) p. 387.

VIVERRICEPS PLANICEPS, J. E. Gray, Proc. Zool. Soc. (1867) p. 269, fig. 6 (skull),—Id. Cat. Carn. Mamm. (1869) p. 17. sp. 2, fig. 6

AILUROGALE PLANICEPS, Fitzin. Sitzgsber. Akad. Wiss. Wien (1869).

HAB. Malayan Peninsula, Sumatra, and Borneo (BLYTH).

Turs little animal, rather rare in collections, is a native of the Malayan Peninsula and the islands of Sumatra and Borneo. It is one of the smallest members of this family; and probably on account of the difficulty of observing it in its accustomed haunts, no information has been published regarding its mode of life by any of the naturalists who have visited the localities in which it is found. The dentition varies slightly from that of other species of the Példle; and from the fact that the upper false molars are double-rooted, Gerxais, in 1855, proposed for it the generic term of Milerian; and in 1869, fourteen years afterwards, Firinger instituted another—that of Milerappel, founded upon the same character. Dr. Gray grouped a certain number of these Cats under the name of Fiverrieeps, distinguished by having the front molar subspiniaries and one-rooted, verying in size according to the species. In F. redspinsor it is similar, but soon falls out. These terms may perhaps answer for subgeneric divisions; but the characters are hardly of sufficient importance to give generic and to their possessors; in fact I cannal perceive any characters in the existing species of the Példle to cause, in my opinion, any one of them to take a separate generic rank, save the Cheetah or Hunting Leopard, which in some particulars has a leaning towards the Canide.

Fur, thick, soft, and long. Top of head dark reddish brown, with indistinct lines of buff on each side from just behind the eyes to above the ears; body dark brown, darkest on the back, every hair thipped with white, giving a silvery-grey oppearance to the coat. Face beneath the eye reddish; and two narrow lines of the same colour pass across the checks to beneath the ears. Throat, breast, and belly white, the latter spotted and marked with rufous. Inside of legs rufous brown, growing light towards the feet. Tail ruther short and thickly furred, reddish brown. Underneath yellowish brown. About the size of a domestic Gat.

Entire length 21 inches, tail 8.

Skull long and narrow. Orbits complete. Nasals of no great breadth, but long. Face on a level with the forehead. Interorbital space wide. Brain-case oblong, full, and rounded. Lower outline of mandbolar ramus straight from the angle to beneath the last molar, then curving rapidly upwards to the symplaysis. False molar of upper jaw double-rooted. Canines rather long. Auditory bulle large and prominent, oblong.



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FELIS PLANICEPS.

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FELIS PARDALIS.

THE OCELOT.

PELIS PARDALIS, Linn. Syst. Nit. (1766) vol. i. p. 62. sp. 5.—Erd. Syst. Regn. Anim. (1777) p. 515. sp. 10.—Grack Syst. Nit. (1788) vol. i. pt. l. p. 78. sp. 5.—Schrib. Sangeth. (1788) Th. iii. p. 509. sh. ciii.—Freek. Zoorg. (1814) p. 234. sp. 50.—Deem. Nour. Diet. Hin. Nit. (1816) p. 1022—1d. Manna. (1819) vol. 12. sp. 42. sp. 12. p. 200, pr. 86. very. Hart. Oct. Millin (1883) p. 180. very days out the project (1887) p. 87. very cost out (1887) p. 8.—Bartl. Proc. Zool. Soc. (1881) p. 141.—J. E. Gray, Proc. Zool. Soc. (1867) p. 270.—Selat. Proc. Zool. Soc. (1868) p. 644.—Gray, G. Carm. Minna, (1869) p. 19. sp. 1

FELIS OCELOT, Smith, Griff. Anim. King. (1827) vol. ii. p. 475. nos. 1, 2, 3, 4, pls.

FELIS CATENATA, Smith, Griff. Anim. King. (1827) vol. ii. p. 478, pl.—Swains. Anim. Menag. (1838) p. 125.

FELIS ARMILLATA, F. Cuv. Hist. Nat. Mamm. (1832) vol. ii. pl. 132.—Less. Nonv. Tab. Règn. Anim. (1842) p. 53. sp. 526.—Gerv. Hist. Nat. Mamm. (1855) p. 91.

FELIS CANESCENS, Swains. Anim. Menag. (1838) p. 118.

LEOPARDUS PARDUS, J. E. Gray, Cat. Mamm. Brit. Mus. (1842) p. 42.

LEOPARDUS GRISEUS, J. E. Gray, Cat. Mamm. Brit. Mus. (1842) pp. 42, 403.—Ann. & Mag. Nat. Hist. (1842) vol. x. p. 260.

LEOPARDUS PICTUS, J. E. Gray, Cat. Mamm. Brit. Mus. (1842) p. 43.—Id. Ann. & Mag. Nat. Hist. (1842) vol. x. p. 260.—Id. Proc. Zool Soc (1867) n. 403.

FELIS MELANURA, Ball, Proc. Zool. Soc. (1844) p. 128.—Fras. Zool. Typ. (1842) pl.—J. E. Gray, Proc. Zool. Soc. (1867) pp. 270, 403.— Id. Cat. Carn. Mamm. (1869) p. 19. sp. 3.

FELIS ALBESCENS, Pucheran, Voy. Vénus, text, vol. v. (1855) Zool. p. 149; atlas, pl. 8.

FELIS (ONCOIDES) PARDALIS, Severtz. Rev. et Mag. Zool. (1858) p. 386.

FELIS PARDALIS MINIMUS, Wils. Proc. Acad. Nat. Sci. Phil. (1860) p. 82.

FELIS GRISEA, J. E. Gray, Proc. Zool. Soc. (1867) p. 270.—Id. Cat. Carn. Mamm. (1869) p. 19. sp. 2.

FELIS PICTA, Screetz. Rev. et Mag. Zool. (1858) p. 194.—J. E. Gray, Proc. Zool. Soc. (1867) p. 271.—Id. Cat. Carn. Mamm. (1869) p. 19. sp. 4. PELIS PARDOIDES, J. E. Gray, Proc. Zool. Soc. (1867) p. 403.—Id. Cat. Carn. Mamm. (1869) p. 20. sp. 5.

PANTHERA MARACAYA, Fitzin. Sitzungsber. Akad. Wiss. Wien, (1869) lix. p. 227.

PANTHERA ARMILLATA, id. ibid. p. 250.

PANTHERA PARDALIS, id. ibid. p. 253.

PANTHERA LUDOVICIANA, id. ibid. p. 258.

PANTHERA MEXICANA, id. ibid. p. 260.

PANTHERA JARDINII, id. ibid. p. 263.

PANTHERA HAMILTONI, id. ibid. p. 265.

PANTHERA GRIFFITHII, id. ibid. p. 266.

PANTHERA CATENATA, id. ibid. p. 268.

HAB. Arkansas (NUTTALL); Louisiana? (AUDUBON); Texas; Mexico; Central America; South America, east of the Andes, to Patagonia.

THE many styles of markings and coloration of this most changeable species have given rise to a formidable number of synonyms, as is shown by the list given above. To vary from each other in the hue and arrangement of the spots and stripes of their coats seems to be one of the chief efforts of the existence of these Cats; and, as if not content with differing from his fellows, an Ocelot usually succeeds in exhibiting a distinct pattern on each of his sides; so that, in fact,

FELIS PARDALIS

having rufous centres. Planks and loins yellowish white, striped with broad lines of rufous margined with black. The spots on the shoulders are often quite small. Legs, both inside and out, spotted with black, the spots growing smaller as they pass down to the feet, the ground-colour of these members being a light buff, becoming a buffy white on the feet. Checks white, crossed with two rather broad lines of black. Chin, throat, breat, and belly white; a black line crosses the throat beneath the checks, and passes down each side of the neck. Breast and belty spotted with black, these posts largest on the belly. Ears behind black, with a conspisous white spot near the tip. Tail rather long, dark buff, with numerous bands and irregularly alonged spots of brovershib black, the tip being also blackists.

This is the usual style of this species, and may be considered typical; but individuals vary so much that it is impossible to get two alike; indeed the two sides of the same animal are usually differently marked.

appearance to get two anner; more the two some of the samulan are second, and the probability of the A specimen of P. pordula in the Leydem Museum, marked F. armillata, from Surinam, is peculiar from having the sides diagonally striped with white bordered on each side with black, the ground-colour between these being grey. Three black stripes run along the centre of the land; but no white is visible on that part. The tail is greyish which, barred with brownish black, the bars becoming very broad towards the tip, which is also brownish black, but not so dark as the bands. The legs are light grey, thickly spotted with dark brown. The head and back of neck are yellowish, with the usual black stripes. Checks, throat, and underparts white. Two black has on the first of these, and a broken one on the throat. Belly spotted with dark brown. This is one of the extreme variations that are occasionally met with. Length from nose to root of tail about 29 inches, and 16.

I give in my Plate representations of the typical stage and three of the variations, viz.:—the one called *E. melanura*, Ball; the *E. grines*, Gray; and a striped pattern that, so far as I know, has happily escaped a name. Although I have called the the same on the Plate var. melnura, set, I do not by this mean to imply that they are in any way entitled to a separate rank. The animals are simply all *E. pardalis*.

The skull varies so much in different Ocelots, as acknowledged by Dr. Gray, that a description would probably only answer for the one under examination at the time; and therefore it seems best to give a general idea of it taken from several specimens. Skull moderate; greatest width equal to about three fifths of the leagth. Face rather short; nose narrow, concave before the orbits, which are large and incomplete. Brain-case broad, rather oblong. Canines moderate in size. An occipital crest is developed on some skulls; but others have no indication of it. Auditory bulbe swollen and prominent. Interobilital pace rather broad.



FELIS TIGRINA.

THE MARGAY.

FELIS TIGRINA, Erd. Syst. Regs. Asim. (1771), 9.17. pp. 11.—Gent. Syst. Nat. (1780) vol. i. pt. 1, p. 80. pp. 13.—P. Cer. Hist. Nat. Manum. (1989) vol. ip. 14.—Tenn. Mon. Manum. (1897) vol. ip. 14.—Tenn. Syst. Manum. (1899) pp. 24. pp. 156—156. Geny, Pore. Zool. Soc. (1877) pp. 271, 404—1d. Cat. Carn. Manum. (1869) p. 22.—Elliof, Proc. Zool. Soc. (1877) pp. 764.—Alaton, Biol. Cent.-Amer. 18680) vol. 1879 pp. 174.

CAYENNE CAT, Penn. Hist. Quad. (1781) p. 271. sp. 163.

GUIGNA, id. ibid. (1793) p. 299, sp. 198,

FELIS GUIGNA, Molina, Sagg. Stor. Nat. Chili, (1810) p. 244. sp. 6.—Desm. Dict. Hist. Nat. (1816) p. 114.—Philippi, Wiegm. Arch. (1873) p. 8. tab. ii. & iii. figs. 2 & 3.

FELIS MITIS, F. Cuv. Hist. Nat. Mamm. (1820) vol. ii. pl. 137.—Azara, Nat. Hist. Parag. (1838) p. 226.—Burm. Syst. Uebers. Thiere, (1854) p. 86.—J. E. Gray, Proc. Zool. Soc. (1867) pp. 271, 404.—Id. Cat. Carn. Mamm. (1869) p. 22.

FELIS MACROURA, Pr. Max. Beit. z. Naturg. Bras. Band ii. (1826) p. 371.—Fisch. Syn. Mamm. (1829) p. 203. sp. 12.—Less. Suppl. Buff. (1847) p. 113.—Burm. Syst. Uebers. Thiere Bras. (1854) p. 87.—J. E. Gray, Proc. Zool. Soc. (1867) p. 271.—Id. Cat. Carn. Mamm.

FELIS CHATI, Griff. Anim. King. (1827) vol. ii. p. 479, pl.

FELIS BRASILIENSIS, F. Cuv. Nat. Hist. Mamm. (1828) vol. ii. pl. 139.

FELIS ELEGANS, Less. Cent. Zool. (1830) p. 69, pl. 21.

FELIS MARGAY, Azara, Nat. Hist. Quad. Parag. (1838) p. 237.

FELIS SMITHII, Swains. Anim. in Menag. (1838) p. 120.

LEOPARDUS MITIS, J. E. Gray, List Mamm. Brit. Mus. (1843) p. 42.

LEOPARDUS TIGRINOIDES, id. ibid.

FELIS (NOCTIFELIS) GUIGNA, Severtz. Rev. et Mag. Zool. (1858) p. 386.

FELIS MEXICANA, De Saussure, Rev. et Mag. Zool. (1860) p. 1 (nec Desmarest).

PANTHERA BRASILIENSIS, Fitz. Sitzungsb. Akad. Wiss. Wicn, (1869) lix. p. 236.

PANTHERA MACRURA, id. ibid. p. 242.

PANTHERA VENUSTA, id. ibid. p. 244.

Cauzel of Costa-Ricans (Alston).

HAB. Mexico (DE SAUSSURE); Central America southwards to Paraguay.

This above list of synonymus very fairly shows how frequently the many variable patterns of this most changeable animal have, by different writers, here no considered and described as representing distinct species. Some have based their specific characters upon the style leght, of the markings, others upon the "kindl" and colour of the fur, while still others have been consteaded them single camples. To ascertain the value of the characters mentioned above, and to impartially decide how the theory of the still other stripes of the still other than t

FELIS TIGRINA.

In the 'Proceedings of the Zaological Society' for 1877, p. 704, I have given the result of an examination of nineteen specimens of this Cat, from various localities between Hondurus on the north and Pangauy on the south, contained in the collection of the British Museum. Among these specimens the tails were of all lengths; irrespective of boelity, decorated with complete or broken rings, or even spots, of various shades and colours, and no two alike, though certain ones from distant localities resembled each other more closely than did those having the same habitat. The markings of the bodies were of all patterns, with every shape and size of spot, some soilily black, others with light centres and black edges, either were off all patterns, with every shape and size of spot, some soilily black, others with light centres and black edges, either the fur, also, all lause of groy and buff were visible. The skulls of these specimens were equally far from agreeing, and the fur, also, all lause of groy and buff were visible. The skulls of these specimens were equally far from agreeing, and were very variable, the differences, however, being mainly in size, but yielding no regularisele characters by which more were very variable, the differences, however, being mainly in size, but yielding no regularisel characters by which more were very variable, the differences however, being mainly in size, but yielding no regularisel characters by which more were very variable, the differences however, being mainly in size, but yielding no reliable characters by which more were very variable, the differences however, being mainly in size, but yielding no reliable characters by which more were very variable, the differences however, being mainly in size, but yielding no reliable characters by which more were very variable, the differences however, being mainly in size, but yielding no reliable characters by which more were very variable, the differences however, being mainly in size, but yielding no reliable characters by which mor

The geographical range of the Margay is very great, extending from Honduras in the north, through South America as far south as Paracuay.

Azara had excellent opportunities for observing this animal in its wild state as well as in confinement; and in his 'Natural History of the Quandrupels of Paraguay' he has given rather full accounts of its habits under both conditions of existence. It is apparently known by the name of "Chiliquanza," and is very common. Azara endeavours to recognize two species as P. milis and P. tiprina, and considers the latter animal rare (indeed he is not certain if it is found) in Paraguay, but was told that it lived on the wooded islands to the south of the river La Plata. He only met with one individual, a state of the production of the property of the property of the production of the production

Under the name of F. mitis, Azara gives a much fuller account of this Cat. He states that it is quite common, but conceals itself so well that neither huntsmen nor dogs ever meet with it. During the day it remains in the most impenetrable retreats, and goes forth at night to hunt, but, should it be stormy, enters boldly into the corrals and courtvards in search of prey. On moonlight nights this animal never enters inhabited places, nor falls into traps; and at such a time it is useless to watch for it. In search of domestic fowls it will climb trees, and will carry off as many as six in a night, besides leaving several dead ones behind. Human beings and dogs are carefully avoided at all times. Generally only a male and a female are found in one district, and only two young are born at a time. In captivity this Cat becomes quite tame; and a friend of Azara's had once as many as fourteen confined together in a den he had made for them. They passed the greater part of the day rolled up like a ball; and when any individual desired to stretch himself he first licked the one lying by his side. Straw placed in this den was cut up into small pieces by them and then used for a bed; and all twigs and sticks were treated in the same manner. The twilight and night were passed in walking to and fro close to the sides of the den. The different individuals lived peaceably together, rarely quarrelling; but when any disputes arose they merely struck at each other with their fore paws. They were fed with live fowls, ducks, rats, young dogs, and cats. These last they would seize with their mouth by the nape of the neck, and, throwing them on the ground, would accurately overlay them (not permitting them to stir) until they were dead. The flesh of cats did not agree with them, but gave them the itch, and caused them to mew, and finally killed them. Reptiles, such as frogs and toads, caused vomiting, so that they wasted to mere skeletons and died. Birds were caught by the head, and completely stripped of their feathers before they were eaten. In their actions they resembled exactly the domestic cat; and at night their eyes shone like those of that animal. The largest male seen by Azara weighed thirty-five pounds. Average length 3 feet 6 inches. One measured 4 feet in length; tail 13 inches.

Molina, in his work on the Natural History of Chili, when describing his F. guigna, states that it seems to be a variety of the Margay; and from the description it would appear that he had a specimen of the F. tigrina before him.

The following descriptions will give an idea of the different variations of this Cat. The first may be considered the typical style:—

FELIS TIGRINA.

Fur soft, not long. General colour light rufous-brown. Four narrow torowink-black lines, two from between and two
from the corner of the eyes, pass over the top of the head and to the base of the neck, where they become broader
and black. A line of white between the nose and eyes. Two narrow brown lines cross the check from the eyes, and
meet another broader irregular dark brown line passing arrows the side of the throat under the jour. Check, throat, breast,
and helly have their ground-colour wither. The entire body, back, sides, and belly thackly cornered with round brownish
black spots, forming lines on the back. The breast is crossed by four or five irregular brownish-black lines. Legs spotted
like the back, the spots reaching nearly to the feet on the fore legs, but only to the knees on the hind ones. Tail long,
covered with blackish spots like the body, and inclining to rings near the tip; the ground-colour rufous like the body,
Back of east rufous, black on outer cloge. Entire legal 28 inches, tail 19.

Back of east rufous, black on outer cloge. Entire legal 28 inches, tail 19.

Another specimen is greyish, with very large brown spots on the flanks, the lines on the head and breast are black, and there is none of the rufous colouring observed on the specimen described above.

A third specimen differs, again, in being yellowish brown on the body, covered with rather elongated blackish spots, bars on breast black. All three specimens are in the British-Museum collection.

A fourth example has the fur soft and short; head, back, shoulders, flanks, and loins grey, darkest and inclined to rafous on the back and hind part of neck, covered with lines and irregular broken black pots, many with light centres. The shoulders have lines, the loins gost of black; flanks covered with regular black rings with rafious centres. Checks, chin, throat, breast, and belly pure white. The usual two black lines across the checks, and the single once on the lower part of the throat. Two irregular broken lines across the breast, not very distinct. Belly aperted with black. Bock of cars black, with a white spot near the upper outside edge. Tail long, with eight or nine black bars becoming wider as they near the tip; the ground-colour like the body.

A fifth specimen has the general colour rich reddish buff, darkest along the back. The usual narrow black lines along the top of bead, which become quite broad and broken upon the shoulders and back. Shoulders, flanks, and loins thickly covered with black spots, which decrease in size towards the lower parts of the legs. Check, threat, breach, belly, and inside of legs pure white; the first having two black lines crossing it from the eye to beneath the ear. Throat and breast crossed by five or six black lines. Belly spotted with blackish brown, as is also the inside of the legs; two black bars crossed by five or ask black lines. Belly spotted with blackish brown, as is also the inside of the legs; two black bars cross the last near the body. Lips white. Ears behind black, with a white spot near the outer edge. Tail very long, same colour as the back, becoming paler towards the tips sent-inged with blackish brown; underneath yellowish white. This is the E. mearours style. Both of the last two specimens described are in the Paris Museum.

An example in the British Museum, instead of having the spots of the body solid and black, has irregular blackish rings with dark rufuse centres, the size of these being twice that of those in other specimens. A second, also in the British Museum, has the spots uniform black and rather small. Entire length 30 inches, but all 15.

The skull of F. fejrion is long; the face on a level with the forehead; mush broad for their length, narrowing rapidly to their found articulation, the ends almost pointed. Orbits incomplete. Braincase full and write, though evenly rounded and oblong in shape. Make boost deep, and forming with the zygoma an almost quadilateral opening. Auditory bulbe large and swollen, narrowing anteriorly. Nasal apertures oblong in slape. Infraorbital forumina oblong. Size of canines moderate.



JWelf & J.Smit del et lith

M&N Hanhart imp

FELIS TICRINA

FELIS GEOFFROYI.

GEOFFROY'S CAT.

LEOPARDUS HIMALAYANUS, J. E. Gray, Cat. Mamm. Brit. Mus. (1843) p. 44 (desc. nulla).

FELIS GEOFFROYI, P'Orbig. Mag. Zool. (1844) Manum. pl. 57,—Id. Voy. Amér. Mérid. Manum. (1847) p. 21, t. 13, t. 14 (skull).—Gerv. Hist. Nat. Manum. (1845) p. 91.—Burm. La Plata-Reis, vol. ii. p. 397.—J. E. Gray, Cat. Carn. Manum. (1869) p. 23.—Sclat. Proc. Zool Soc. (1820) p. 269.

ONCIPELIS GEOFFROYI, Severtz. Rev. Mag. Zool. (1858) p. 386.

PARDALINA WARWICKI, J. E. Gray, Proc. Zool. Soc. (1867) pp. 267, 405, pl. xxiv.—Id. Cat. Carn. Mamm. (1869) p. 14.—Id. Ann. & Mag. Nat. Hist. (1874) vol. xiii. p. 50, vol. xiv. p. 354.

FELIS PARDINOIDES, J. E. Gray, Proc. Zool. Soc. (1867) p. 400.—Id. Cat. Carn. Mamm. (1869) p. 27. sp. 23.—Elliot, Proc. Zool. Soc. (1872) p. 203.—J. E. Gray, Ann. & Mag. Nat. Hist. (1874) vol. xiii. pp. 56, 475, vol. xir. p. 354.

PANTHERA GEOFFROYI, Fitzin. Sitzungsb. Akad. Wiss. Wien, (1869) lix. p. 270.

FELIS WARWICKII, Sciat. Proc. Zool. Soc. (1870) p. 796.

FELIS GUTTULA, Hensel, Königl. Akad. Berlin, (1872) p. 73.

CONTRACTOR OF STREET

Hab. Pampas of Buenos Ayres to 44° S. lat. (D'Orbigny); Argentine Republic (Burmeister).

This very distinct and well-marked species has a confused though not lengthy synonymy. An individual formerly alive in the Surrey Zoological Gardens, and there known as the Himalaya Cat, was called by the late Dr. J. E. Gray, in his 'List of Mammalia in the British Museum, published in 1843, Leopardus himalayanus; but no description of the animal was added. As this habitat is now ascertained to have been incorrect, and as the continuation of Dr. Gray's name would simply be the means of increasing the confusion already existing in the nomenclature of the species, I have not adopted it. In 1847 D'Orbigny procured specimens of this animal on the banks of the Rio Negro, and described them (l. c.) on his return to Europe as Felis geoffrogi, depositing his types in the Museum of the Jardin des Plantes in Paris. In his account of the species he says that it inhabits the Pampas of Buenos Ayres to the 44th degree of south latitude, and is common everywhere on the Rio Negro, in Patagonia, living in the reeds, and subsisting upon the various species of Tinamous and Eudromias. In the 'Proceedings' of the Zoological Society of London for 1867, Dr. Gray proposed for the present species the generic term of Paradalina, and changed the specific appellation he had formerly bestowed upon it to warreicki, giving at the same time a characteristic figure of the creature by Wolf. In his Catalogue of Carnivora' (1869), the species is more particularly described under the name last given. There is a variety, possibly a geographical race, of this species (although I have been unable to discover that it is confined to any particular districts, specimens having been received from the same localities in which the typical F. geoffrogi is found) which has been called Felia pardinoides by Dr. Gray (l. c.), described from a young animal, and latterly Felia guttula by Herr Hensel (l. c.). This variety is represented by the lower figure in my Plate, taken from an example in the Leyden Museum, kindly loaned to me by Prof. Schlegel, and which came from Patagonia. As will be seen, it differs from the typical style by having larger spots upon the flanks, with light centres, forming irregular blotches. Herr Hensel sent the skulls to Berlin, where I had an opportunity of examining them through the kindness of Dr. Peters. There were two, belonging to male and female individuals; and I could perceive nothing that indicated they represented a species distinct from F. geoffrogi. Fully aware of the curious and often extraordinary varieties that are met with, and knowing also that large- and small-spotted individuals are found among all the species of the Spotted Cats, I am not surprised at the occurrence of this differently marked form, and do not consider it to be distinct. In the 'Annals and Magazine of Natural History' for 1874 (vol. xiii.), Dr. Gray separated the F. geoffrogi, D'Orb. (making it a synonym of F. guigna, Molina), from his Pardalina warsicki, on account of its "having a white belly, instead of that part being spotted." This last statement, however, is quite incorrect,

FELIS GEOFFROYI.

as the bellies of the specimens brought by D'Orbigny are exactly as he described them to be—"white, spotted with brownish black." The F. guipne of Molina, on the other hand, has but little to do with F. guipne of Molina, on the other hand, has but little to do with F. guipne of F. tigrina.

stated by Molina himself, that his animal is merely a variety or variable specimen of F. tigrina.

For rather soft and thick. General colour ratios; body covered with small black spots, which on the back are rather. Fur rather spot and thick. General colour ratios; body covered with small black spots, which on the back are rather control of the control of the back spots. Head ratios, with two narrow black lines down each side of the face; checks and centre, extending onto the back, where they become bread; two black stripes on each side of the face; checks and throat white, a black band across the lower end of the under jaw, and a black stripe on each side of the throat and one across the upper part of the breast. Sholdceds spotted like the hard quarters. Belly white, spotted with bownish black; two black bars inside of front legs, and four inside of hind legs. Tail long, same colour as body, narrowly ringed and tipped with black, the under portion greyish in the centre. Ears belind black, with a white spot in the centre.

M. Alphonse Milne-Edwards kindly drew my attention to an individual of this species which was received from the Upper Parama, and died in the Jardin des Plantes. It is peculiar for its light colour, which is a pale yellowish brown, thickly corrected with small black spots all over the body and hind legs; on the form legs they take the form of irregular bars. Top of head of a slightly greyish hee; but the checks and neck are yellowish, like the body. The usual check strates are present, and also the lines no back of head and neck, not continued, however, upon the back. Chin and upper part of threat; underparts and inside of legs whites, spotted with back on the former and barred on the latter. Tail same colour as body, irregularly and narrowly ringed with black. Length of body 25 inches, tail 15 inches. This specimen has the spots rather smaller than the typical style, and the tail less broughly ringed. It is probable that in a large series of specimens individuals would be found to exhibit all variations of spots, from that represented in the lower figure in my Plate to the professley and minutely spotted specimens us described, these two being the extremes.

The shall of the species is peculiar among those of the Cats by its strongly marked characteristics. It is broad, with a very short face and a rather high arched forthcole; a massle moderately broad, and carring outwards and backwards towards their frontal articulation. The skull viewed in profile shows that the facial region is highest above, and from this part shelves gradually backwards towards the supmocripital region. Postorbital process of frontal bow unusually lengthened and selender; orbits moderate, incomplete, lower outline of mandibular ramus much curved between symphysis and angle. Upper ennines moderate in size. Processes of markill very broad and aquare at their upper posterior ends.



WHERE STRUCK

FELIS GEOFFROYI

MANRASANT IN

FELIS BENGALENSIS.

BENGAL LEOPARD CAT.

BENGAL CAT, Penn. Hist. Quad. vol. i. p. 293.

? FELIS UNDATA, Desm. Nouv. Dict. Hist. Nat. (1816) vol. vi. p. 115.—Blyth, Cat. Mamm. & Birds Burma (1875) p. 27. sp. 56.

FPLIs BENGLIAR, 1888. 1987, 19

FELIS NEPALENSIS, Vig. & Horst Zool. Journ. (1829) vol. iv. p. 582.—Jard. Nat. Libr. vol. xvi. p. 224, pl. xviii.—J. E. Gray, Proc. Zool. Soc. (1867) pp. 274, 400.—Id. Cat. Carn. Mamm. (1869) p. 27. sp. 21.—Id. Ann. & Mag. Nat. Hist. (1874) xiii. p. 56.

LEOPARDUS ELLIOTI, J. E. Gray, Ann. & Mag. Nat. Hist. (1842) x. p. 266.—Id. Cat. Mamm. Brit. Mus. (1842) p. 44.—Hodgs. Cat. Coll. Mamm. Brit. Mus. (1863) p. 4. sp. 31.

FELIS PARDOCHROUS, Hodg, Calc. Journ. Nat. Hist. vol. iv. (1844) p. 286.—Horsf. Cat. Mamm. Mus. E.-Ind. Co. (1851) p. 47. sp. 76.—Id.
Proc. Zool. (1856) p. 396.—J. E. Gray, Proc. Zool. Soc. (1867) p. 273. fig. 7, p. 460.—Id. Cat. Carn. Mamm. (1869) p. 27. sp. 24. FELIS (PRIONAILURUS) PARDOCHROUS, Severtz. Rev. Mag. Zool. (1858) p. 387.

FELIS TENASSERIMENSIS, J. E. Gray, Proc. Zool. Soc. (1867) p. 400.—Id. Cat. Carn. Mamm. (1869) p. 28. sp. 25.—Id. Ann. & Mag. Nat. Hist. (1874) xiii. p. 55.—Blyth, Cat. Mamm. & Birds, Burma, p. 27 (J. A. Soc. Beng. pt. ii. 1875).

FELIS WAGATI, J. E. Gray, Proc. Zool. Soc. (1867) p. 400.—Elliot, Journ. Asiat. Soc. Beng. vol. xvii. note to p. 84.—Gray, Cat. Carn. Mamm. (1869) p. 29. sp. 28.—Id. Ann. & Mag. Nat. Hist. (1874) xiii. p. 55.

VIVERRICEPS ELLIOTI, J. E. Gray, Proc. Zool. Soc. (1867) p. 269.—Id. Cat. Carn. Mamm. (1869) p. 18. sp. 3.—Id. Ann. & Mag. Nat. Hist.

PANTHERA TORQUATA, Fitzin. Sitzgunsber. Akad. Wiss. Wien, (1868) lviii. p. 505. PANTHERA NEPALENSIS, Fitzin. Sitzungsber. Akad. Wiss. Wien, (1868) lviii. p. 510.

FELIS PARDOCHROA, J. E. Gray, Ann. & Mag. Nat. Hist. (1874) xiii. p. 55.

Theet-Kyoung, Arakan.

HAB. Nepal, Thibet, Darjeeling (HORSFIELD, under the names of pardochrous and horsfieldi); Bengal (HORSFIELD); South-east Asia from Thibet to the great islands of the Archipelago, but perhaps not Borneo (BLYTH).

This long-since described and well-known species has a multitude of synonyms, arising from the fact that the various styles of marking exhibited by individuals have been considered by authors to indicate distinct species. I have examined nearly (if not quite) all the types of these so-called species, and have satisfied myself that they only represent the changeable patterns of markings that are the rule and not the exception among spotted Cats, and therefore should not be regarded as of sufficient importance to be elevated into separate specific rank. Jerdon, who examined numbers of this species, says that in some the markings have a "marbled appearance, in others they appear to be dispersed more irregularly and less in rows, and in some the spots are much smaller than in typical specimens." Regarding this last fact, my examination of all spotted Cats has proved to me that in every species there will be found individuals with spots very much larger or very much smaller than that which may be deemed the typical style, but that when a sufficient number of examples have been brought together it will generally be found that these extreme cases graduate, down or up, as the case may be, towards the type. Had this constant variation among the Felidæ been understood, we should have been spared the unnecessary descriptions of many forms, and the synonymy of the family would have been greatly lessened and benefited.

The Leopard Cat is found throughout India in the hilly regions, from the Himalayas, which it ascends to a considerable height, through Assam, Burmah, the Malay peninsula, and the islands of Sumatra and Java. In Southern India, according to Jerdon, it is abundant in Coorg, Wynaad, and the forest-tracts along the Western Ghâts, but is rare on the east coast and in Central India. It is also found in Ceylon. Hodgson states that it inhabits Thibet, and in the Bengal Sunderbunds goes down to the level of the sca. It dwells in wooded districts or in heavy grass-jungle interspersed with brushwood. Its

FELIS BENGALENSIS.

food is poultry, among which it occasionally commits great depredations, and also hares, mice, dore, &c. It appears to be untanable, no matter how young it may be enuglit, and during the day, though wake and vigilant, remains recubed in a corner of its cage. The breeding-season is stated to be the month of May, and the litter to consist of three or four young-Pennant, who first described a specimen as the Bengal Cat, stated that it swam on board ship at the month of the Hoogly-Pennant, who first described a specimen as the Bengal Cat, stated that it swam on board ship at the month of the Hoogly-Pennant, who first described a specimen as the Bengal Cat, stated that it swam on board ship at the month of the Hoogly-Pennant is an arboral species like the present would be likely to take to the water voluntarily. Whater (i.e.) mentions seeing this species in Barmah, and that it frequently ename to the villages and stoke the foods. He the highly the Barmesseeing this species in Barmah, and that it frequently ename to the villages and stoke the foods. He the highly the Barmese of the highly described the Barmese and the state of the

The soft, field. General colour pair rufous, darkest on the lack. The usual four narrow black lines over the top of the head down the back of the neck, continued down centre of lack in spots and lines; two on the checks meet one that crosses the thront. Sides of neck, shoulders, and sides of body covered with large irregular black spots or blotches, these growing smaller on the loins and hind quarters, diminishing on the lower part of force and hind legs to very small bownish-black spots. Line between eyes and noe, eales of face, clini, throat, levels, and insides of legs pure white; two or three irregular black lines cross the breast; belly spotted with horwinh black, and insides of legs harred with the same colour on the upper part. Back of ears black, central portion yellowish white. Tail long, same colour as body, irregularly spotted with brownish black. The long same colour as body, irregularly spotted with brownish black have been supported with brownish black. The specimen is in the British Museum. Entire length 21) inches, tail 10 jinches. An spotted with brownish black in the specimen is in the British Museum. Entire length 21) inches, tail 10 jinches. An example in the Leyden Museum from Thheir is, a little smaller than the usual style of F. bengdeastie, otherwise closely resembles it. The spots on the loins are round; and in the general character of the markings it resembles the resemble white with described above. Another specimen in the same museum from the Hinalayas is very light in colour, pellowish white with refons and browns spots and streaks, darkets on the beds and loins. Tail same colour as the body, irregularly ringed with refonsabovon. Four stripes over the head and down the back of the neck dark brown; bus over the chest and on the marse side of hold legs dark tromost-hovon.

The skull of the Bengal Cat has a short facial region, and, as seen in profile, has the upper outline but very slightly arched. The massla are narrow and pointed at their articulation with the frontal bone, and extend beyond the processes of the maxilla. Maxilla broad, and their foundal processes segare at their upper posterior ends; infraorbital formen large, open, and rounded; the zygoma is ruther stout, and arches well outwards. Obtis incomplete; but the postorbital process of the frontal bone is very long, and gradually narrows to its fit, which is pointed; the unit frontal is wife and diamonal-shaped on its upper surface, the postfrontal being contracted rapidly anteriorly; the parietals are full and rounded; and there is a slight protocejular crost or ridge. Tympanie bulke well developed, with the external auditory formem large, rounded, and freely open; lower outline of the inferior ramus straight from symphysis to angle. Canines moderate in size; juicious sundal and feeble; moders moderate.



WHA JSent delet lith

MAN Rashart, in

FELIS BENGALENSIS.

FELIS VIVERRINA.

THE FISHING CAT.

BRAZILIAN TIGER, Pennant, Hist. Quad. pl. 31. fig. 1?

PERIS VICERINA, Bental, Proc. 200, Soc. (1833) p. 68-Lens. Compl. Belf. (1857) vol. 1, p. 409--lik. Non; 7th. Rige. Join. (1843) p. 135, p. 53, p. 530, Frant; Zool. Typ. (1840) p. 1-llenf. Cat. Mann. Mes. E-Leic. Cat. (1817) p. 68, p. 55, .-fers. Natl. Has. Manne. (1835) p. 68--llph, Proc. 2005. Soc. (1835) p. 1-llenf. Cat. Mann. Mes. E-Leic. Cat. (1842) p. 353, and (1879) p. 689--llenf. Manne. (1835) p. 68--llph, Proc. 2005. Soc. (1835) p. 1-llenf. Cat. Mann. (1835) p. 68--llph, Proc. 2005. Soc. (1835) p. 1-llenf. Cat. Mann. (1835) p. 68--llph, Proc. 2005. Soc. (1835) p. 1-llenf. Cat. Mann. (1835) p. 68--llph, Proc. 2005. Soc. (1835) p. 1-llenf. Cat. Mann. (1835) p. 68--llph, Proc. 2005. Soc. (1835) p. 1-llenf. Cat. Mann. (1835) p. 68--llenf. (1835) p. 68--llenf. (1835) p. 68--llenf. (1 Ind. (1867) p. 103. sp. 108.—Sciat. Proc. Zool. Soc. (1870) p. 797.—Blyth, Cat. Mamm. & Birds Burma (1875) p. 27. sp. 55.

FELIS VIVERRICEPS, Hodgs. Journ. Asiat. Soc. Beng. (1836) vol. v. p. 232 (desc.), vol. x. p. 918.—Id. Calc. Journ. Nat. Hist. vol. iv. p. 286.

PRLIS HIMALAYANA, Jard. Nat. Libr. vol. xvi. pl. 24, p. 230. FELIS CELIDOGASTER, J. E. Gray, List of Hodg. Coll. Brit. Mus.

LEOPARDUS VIVERRINA, J. E. Gray, Cat. Mamm. Brit. Mus. (1842) p. 43.

FELIS (ZIBETHAILURUS) VIVERRINA, Severtz. Rev. et Mag. Zool. (1858) p. 387.

VIVERRICEPS BENNETTI, J. E. Gray, Proc. Zool. Soc. (1867) p. 268, fig. 5.—Id. Cat. Carn. Mamm. (1869) p. 16. sp. 1.—Id. Ann. & Mag. Nat. Hist. (1874) vol. xiv. p. 93.

GALEOPARDUS VIVERRINUS, Fitzin. Sitzgsber. Akad. Wiss. Wien (1869) lix. p. 644.

GALEOPARDUS HIMALAYANUS, id. ibid. p. 647.

Chittra Bilow of the Tarai (FRASER).

Hab. India (with Ceylon); Burma, common in the Tenasserim Provinces. Found only in the lower valleys of the Himalayas; Malacca, Camboja, South China (BLYTH). Open lower regions of Nepal and Tarai (Horsfield). Formosa (SWINHOE).

This animal, by some called a Tiger-cat, is pretty well distributed in the Indian and Indo-Chinese subregions of the Oriental Region. In the first of these it is found throughout Burma, according to Jerdon and Blyth, common in Tennasserim, Travancore, and Ceylon, and extends up the Malabar coast as far as Mangalore. It is also found in the Terai and the marshy region at the foot of the Himalayas, but apparently goes no further west than Nepal. In the second subregion it is a native of Southern China, Camboja, and the island of Formosa. Jerdon says that in Bengal this Cat inhabits low watery situations, and that he has often met with it on the edge of swampy thickets. In the neighbourhood of Calcutta, according to Buchanan Hamilton, it is common, and frequents reeds near water, and besides fish and birds preys upon Ampullariae and Uniones. As to its disposition in captivity, accounts vary, the last-named writer declaring it to be fierce and untamable, while Blyth thinks quite the contrary, and says he has had several "big toms quite tame." Those that I have seen appeared especially savage, and would allow no one to approach, growling, spitting, and striking at all who drew near the cage in which they were confined. The one whose portrait is given on the accompanying Plate was exceedingly fierce, and it was with difficulty that he could be kept in sight long enough for Mr. Wolf to make his sketch; for he persisted in running into a box left in his cage, so as to escape observation, and his strength was so great it was no easy matter to dislodge him. At last, after he had been turned out of this box, the entrance was closed; and all the time his likeness was being taken he kept up a constant growling and spitting, while his flashing eyes, cars laid back upon his head, and quick uneasy jerking of the tail showed the furious rage he was in; and yet this animal had been an immate of the Zoological Gardens for a considerable time, always well fed and kindly treated. I am inclined to think every thing depends upon individual temperament, and that opinions formed as to the fierceness or docility of any species of this family from one or two specimens are very apt to lead one astray from a correct judgment. The Rev. Mr. Baker, writing of the habits of this creature in Malabar, as quoted by Jerdon, says that it often kills pariah dogs, and he has known instances of slave children (infants) having been taken from the huts by this Cat. It also kills young calves. Swinhoe, who procured this species in Formosa, and also saw its skins in South China, says that he had examined specimens from the Himalayas,

FELIS VIVERRINA.

India, and Malacca, and that they all varied in size, length of tail, colour and size of spots, and tint of fur. The colour of the Formsona animal is much livelier, and the spots more distinct; and the skin is much sought after by the Chinose to make cuffs and cellsrs for their coars. From this cause the creature is comparatively nave. He relates the following, but does not wouch for its truth.—"Some ninety years ago the Chinose colonists of Formson, being very anxions to externion the savages from themountains; imported a pair of Tigers () from China, and let them loose in the woods. The savages at first took them for a large variety of Cat, and tried to make friends with them; but some of their number having fallent within the contraction of the formson the savages from the savages and the savages are saved and still bears the name of the Great-Cat Hall." This Cat has a certain the freeze is and Mr. Hodgoon thinks it is affined to that group, from the form of its face, and also to the Lyaxes by the shortness of its tail, which extends but little below the os calois. But, as stated by Fraser, it has no further resemblance to either, as its cars are short and devoid of tafts, the body full, and the limbs strong and of medium length. The intestinal causal is more than three times the length of the body full, and the limbs strong and of medium length. The intestinal causal is more than three times the length of the body full.

Fur short, coarse. General colour dark grey (darkest on back), thickly covered with dark brown spots, smallest and least conspicuous upon the shoulders. Head and back have three or four dark brown lines going lengthwise, which, however, upon the lower back and rump become broken up into spots like those on the flanks and other parts. Two backish brown lines pass scross the check, one from behind and one from beneath the forward part of the eye; and a line of the same huse crosses the threat just below the clim. Throat and besset white, the latter crossed by three or four blackish brown lines passing from shoulder to shoulder. Belly same colour as flanks, spotted with blackish brown in continuous lines crosswise. Inside of legs greyish white, with from two to three dark brown has recosing the upper part near the body. Tall rather short, slender, some colour as the back, barred on top with cleastant-brown, the bars going diagonally, and meeting in the centre, forming a V-shaped mark; tip elesstant-brown. Underneath greyish white. Length from nose to root of tall about 30 inches; tail 9.

A specimen of this species in the Paris Museum from Cochin China is of a general reddish givey, brightest on the head and neek, where it is buff. Four marrow black lines run along the back of the neek and down the centre of the back. Underparts white, and, with the saids, are spotted with brownish black, the spots being very large upon the breast and belly, rather minute upon the saids and hind quarters. A brownish black bar crosses the upper part of the threat. Two narrow black lines on the cheeks. Ears behind black, with the central portion pellowish white. That dark grey, spotted on top, and irregularly ringed near the tip with brownish black. Length of skin from nose to root of tail 29 inches, tail 9. This appears to be a reddish style of E. vierieriani.

The skull of *F. sicorious* is long and narrow, the upper outline when viewed in profile curving that slightly. The face is short, and nearly on a level with the forehead. The nasals are very long and narrow, pointed and slightly depressed at their articulation with the frontals. Maxilla very broad, the processes extending beyond the nasals, and somewhat rounded. The premaxilla sare broad, and extend about one third the length of the nasals. Othis complete. Interorbital space narrow. Brain-case full and oblong in form, with a fairly developed erest or ridge. Auditory bulle very large. Lower outline of inferior ramus perfectly straight from symphysis to angle. Canines rather large and strong, and the molar series well developed.



Smit det et lith

FELIS VIVERRINA

FELIS TRISTIS.

FONTANIER'S SPOTTED CAT.

FELIS TRISTIS, Alp. Milne-Edw. Recher. des Mamm. (1872) p. 223, pl. xxxi.

HAB. China, Ztchuan? (FONTANIER).

This apparently distinct species was first characterized by M. Alphonse Milne-Edwards (l. e.); but beyond the fact that the skin was purchased by M. Fontanier at Pekin, and that it was said to have come from the interior of China, nothing is known in regard to it. The skin was in a very lad condition; and the skull was wanting. In size this similar would seem to be about equal to F. pardiance, or the Spanish Lynx, being 33 inches in length from the nose to the root of the tail, while the tail itself is 16 inches long. My description and figure here given were taken from the type, at present unique in Europe; but before we can arrive at a satisfactory ides of the anima's speciance we must wait for the acquisition of particle specimens. At present, so far as I can judge, it seems to have some affinity to Felix surranents in the shape and Linchlattics of its markines, and in the long basky tail.

perfect specimens. At present, so far as I can judge, it seems to have some affinity to Peta sucressive in the sulpse and distribution of its markings, and in the long busby tail.

Fur soft and long. General colour light blushs grey, inclining to yellowish. Three or four blackish brown lines, beginning in the centre of the bead, between the cars, run along the whole length of the back; rest of body, flanks, and logs covered with large spots of dark brown. Underparts lighter than the upper, less profusely marked and spotted with brown. Two bars of ratios brown pass across the upper part of the breast. Tail very long and busby, rufous brown above, yellowish brown beausth, the upper part presenting a series of obscure dark brown bars.



Walf & J.Sent del et leh

· FELIS TRISTIS

MANHAMBART me

FELIS SCRIPTA.

THE PAINTED CAT.

FELIS SCRIPTA, Alph. Milne-Edw. Nouv. Arch. Mus. vol. vii. Bull. p. 92 (note).-David, Nouv. Arch. Mus. vol. vii. (1871) p. 89.

HAB. Moupin, Setchuan (A. DAVID).

Thus pretty little Cut was precured by M. Devid in the principality of Moupin; and two individuals, rather different in colour and marking, were sent to the Paris Masserm, and served at types for Pot. A. Milne-Edwards, who described, them as above noticed. Its markings are similar in kind to those of the spotted Cuts from America rather than to any of those of the 004-World species; but the faul is thicker, and more inclined to be busly. It inhabits, according to its discoverer, the great forests of the high mountains in Moupin, and does not appear to be uncommon there. The individual described by M. Milne-Edwards was killed in the mount of March; and its rise was pellowish electatur.

Fur soft and long. Head and centre of the back rufous brown, striped with narrow lines of black; two of these commence at the corners of the eyes, and run along the side of the head; all the rest begins at the middle of the head. Shoulders, flanks, and loins yellowish buff, cowered with rather large irregular lines and blotches black with light frown scatters. Ridge of nose and perion of upper lip redish brown; black spot in front of the eye extending to the upper lip. Checks white, crossed by two blackish brown lines. Chin, threat, hexast, inside of legs, and belly white. A black line crosses the throat, point from the base of one car to that of the other. Rest of underparts covered with rather large black spots. Legs on the outside ruflous, the fore legs spotted with black to the feet; lower part of hind ones fee from spots. Tail long, ruflous, lighter beneath, covered with unmerous black rings, which, however, do not meet beneath, leaving the underpart uniform yellowish brown. Back of ears black, with a white spot in the centre. Size about that of a domestic Cat. Description taken from the types.

Another specimen from the same locality (also a type) is light yellowish brown, with the back and sides covered, the former with broken lines, the latter with spots, of reddish brown, having the upper edges usually black. Head marked with black as in the other specimen. Loins spotted with black. Two black lines across the cheeks. Throat, breast, belly and inside of legs pure white, crossed irregularly with very dark chestant-brown almost black, but becoming brighter on the fore part of shoulder. Fore legs inside for nearly the whole length, and hind legs to the kene, spotted with black. Tall long and bushy, ringed narrowly with black; underparts free from markings, same colour as the body. This specimen has some of the rufous colouring exhibited by the other, being apparently the pale style of the species. The lower part of hind legs is free from spots, yellowish brown in colour.

The skull resembles somewhat that of *P. chinesais* (*P. jurensis* of this Monograph). The nose is straighter than that of the latter; and the upper part of the infraorbital foramen is more shrunken, presenting the appearance of a linear opening. The orbits are nearly complete. Auditory balles more swollen in front than those of *F. jurensis*, Upper camines longer, but not so strong as in the species compared. Interorbital space broad; brain-case dome-shaped, unusually full

Three specimens, brought by M. David, in the Paris Museum vary considerably both in their colour and style of markings and in size. The following are the dimensions:—I. Nose to root of tail 24 inches, tail 8; 2. Nose to root of tail 25 inches, tail 8; 3. Nose to root of tail 22 inches, tail 10. A fourth specimen, obtained from M. Parzudaki in 1856, and marked #? eripta with a doubt, is 22 inches from nose to root of tail, tail 12 inches.



FELIS CHRYSOTHRIX.

AFRICAN GOLDEN CAT.

FELIS CHRYSOTHRIX, Temm. Mon. Mamm. (1827) vol. i. append. p. 251.—Fisch. Syn. Mamm. (1829) p. 209. sp. 26.—Less. Compl. Buff. (1838) p. 412.—Id. Nouv. Tab. Règn. Anim. (1842) p. 56. sp. 544.

FELIS AURATA, Temm. Mon. Mamm. (1827) vol. i. p. 120.—Less. Man. Mamm. (1827) p. 185. sp. 492.—Vig. Zool. Journ. vol. ii. p. 530 -Elliot, Proc. Zool. Soc. (1871) p. 759.—Sclat. Proc. Zool. Soc. (1873) p. 312, pl. xxvii.

FELIS GELDOGASTRI, Tenn. Mon. (1987) p. 140.—Lest. Man. Monm. (1987) p. 191.—Fiels. Syn. Mann. (1987) p. 264.
p. 14.—Less. Comp. Bef. (1888) vol. i. p. 140.—Lest. Man. Monm. (1987) p. 26. sp. 241.—Lest. Sour. End. (1888) p. 16. dept. dept. (1888) p. 16. dept. (1889) vol. i. p. 140.—Lest. Sour. This Riga. Anim. (1897) p. 25. sp. 241.—Le. Esquisa. Soul. (1888) p. 16. (1897) p. 26. sp. 241.—Le. Esquisa. Soul. (1888)

FELIS CHALYBEATA, H. Smith, Griff, Anim. Kingd. (1827) vol. ii. p. 474, pl. (light variety).

FELIS NEGLECTA, J. E. Gray, Ann. & Mag. Nat. Hist. (1838) vol. i. p. 27.—Severtz. Rev. Mag. Zool. (1858) p. 389.—Selat. Proc. Zool. Soc. (1860) p. 246 (light variety).—J. E. Gray, Proc. Zool. Soc. (1867) p. 272. sp. 15, and p. 394. sp. 1.

LEOPARDUS NEGLECTUS, J. E. Gray, Cat. Mamm. & Birds Brit. Mus. (1842) p. 41 (light variety).

FELIS RUTILA, Waterb. Proc. Zool. Soc. (1842) p. 130.—Gray, Proc. Zool. Soc. (1867) pp. 272, 395.—Id. Cat. Carn. Mamm. (1869) p. 23. sp. 14.

LEOPARDUS CELIDOGASTER, J. E. Gray, Cat. Mamm. & Birds Hodg. Coll. Nepal & Thibet, (1846) p. 6.

PROFELIS CELIDOGASTER, Severtz. Rev. Mag. Zool. (1858) p. 386.

CHAUS CHRYSOTHRIX, Fitzin. Sitzgsber. Akad. Wiss. Wien, (1868) lviii. p. 194.

PANTHERA CELIDOGASTER, Fitzin. Sitzgeber. Akad. Wiss. Wien, (1869) lix. p. 272. GALEOPARDUS NEGLECTUS, Fitzin. Rev. Katz. Sitzgeber. Akad. Wiss. Wien, (1869) lix. p. 659.

SERVAL RUTILA, J. E. Gray, Ann. & Mag. Nat. Hist. (1874) vol. xiv. p. 352.

SERVAL NEGLECTA, J. E. Gray, Ann. & Mag. Nat. Hist. (1874) vol. xiv. p. 352.

Hab. West Africa, Sierra Leone (Waterhouse); Guinea (Temminck); Gambia (J. E. Gray).

This Cat was first described by Temminck under the name of aurata in his 'Monograph of the Mammalia;' but in the appendix to the same work he renamed it chrysothris, which I have adopted, in order to avoid the confusion that has been created under the name first given. This species is apparently very variable in its coloration, examples being met with from a dark red hue to a light grey with dark spots. The late Dr. J. E. Gray described the last style as Felix neglecta (l. e.), from the Gambia; and Temminek also called the animal from the coast of Guinea Felis celidogaster (l. e.). That these names were given to the same variety I was able to ascertain without doubt, as, through the kindness of Prof. Schlegel, I was enabled to bring Temminck's type to London, and on comparing it with the flat skin in the British Museum. which is Gray's type of F. neglecta, found them to be identical. Smith, in Griffith's Animal Kingdom, called the same form F. chalybeata. This species is known generally to naturalists as Felia ratida of Waterhouse (=F. Temminckii, Vig. & Horsf.), that name having been bestowed upon the red form then represented by an imperfect skin obtained at Sierra

Temminck's type of F. chrysothrix was purchased from a dealer in London; and its habitat is unknown. It was considered to be the Golden Cat from Sumatra, Borneo, and Nepal, called by Hodgson moormensis, as they do resemble each other somewhat; but an investigation which I made of the type in Leyden proved that this view of the case was an error. In the type specimen of Temminck's F. celidoguster the end of the tail is still red, like the typical form of F. chrysothriz, as though the animal had been changing its coat from one colour to the other; and this gave me the idea that possibly the grey and red coats may indicate merely seasonal states; but I have not been able to ascertain that this view is correct. There is still another style of coloration in this species, intermediate between the other two-a rich golden red with distinct spots. This is a very handsome variety, and has been obtained in the same locality with the other forms. A specimen of this style was living in the gardens of the Zoological Society in 1873, and is figured in the Proceedings. It was a young animal, and quite tame, permitting itself to be handled by the keeper, even when feeding. The eyes were dark brown in colour.

FELIS CHRYSOTHRIX.

It will thus be seen that much confusion has existed in the synonymy of this species, caused by its variable coat, together with the senty materials which naturalists had at their command; and the only possible way this difficulty could be rectified was to bring the types together for comparison. In the accompanying Plate are represented the three different varieties of this species; two of the specimens figured are those belonging to the Leyden Museum. The gray-sported animals is a portation of Temminds by port of F. colidoparic; and the upper figure exhibits the intermediate stage, taken from a specimen brought to the Museum at Leyden from the coast of Guinea. This form happily has never been described as distinct.

Of the habits of this species we know nothing.

The various styles may be described as follows:-

Typical: General colour above age, indistinctly aportiqu' with dark red on the sides, spots small in size; hencath white, spotted with blackhi brown; tail oral show, while beneath, unspatch, no white marks upon the face, which is of the same red colour as the back and sides. The light variety named ceitifogener by Tenminek and seglectus by Gray has the pof the head reddilsh brown, regularly marked with blackish brown, and without any of the lines running lengthwise which are usually seen in Cats; the back and sides are a uniform grey, the spots dark brown on the sides, dark red on the back; he reast yellowish white, banded with observe pale brown, these bands becoming darker and more distinct undermeath between the fore legs; belly white, with large blackish-brown spots; inside of fore legs and hind legs distinctly barred with reddish brown; all brown, with pale brown ringe, and dark red-brown.

The second variety, represented by the upper figure in the Plate, is of a general golden-red colour, thickly marked with dark obstant spots, these being nearly black along the centre of the back, and longest on the rump and flands. Upon the fore legs the spots coalesce and form rings. Checks and ditrout white, spotted slightly with minute reddish does. Breast dark buff, crossed with irregular lines of dark brown. Underparts white, with numerous blackish-brown blotches. Inside of fore legs growpish white, barred and spotted with blacksh brown; inside of hind legs rudous, lighter in colour than the body, with several bars of blackish brown under the back on the D. Total length about 37 inches, tail 10 inches, tail 10 inches, ton 10.

Stat2.—With is about two think the length. Height moderate, with the arching from before to behind uniform. Nead process centuch believa up the side of the mass home. The upper surface of the appearing processor is a rather deep and broad depression reaching from the orbit to the outer edge of each mass. For changing the processor of the state of the processor is the processor of the processor of the processor is the processor of the processor



Wolf & J. Smit Selection

FELIS CHRYSOTHRIX

MANUAL ST

FELIS SERVAL.

THE SERVAL.

FELIS SERVAL, Erd. Rign. Asim. (1777) p. 523. sp. 13.—Scherh. Singuth. (1778) Th. iii. p. 407, tub. criii.—Gmel. Syst. Nat. (1788) vol. 1, p. 81, p. 82, p. 14.—Fisch. Zoope. (2481) p. 234. sp. 8.—Dens. Nouv. Det. Hint. Nat. (1810) p. 110.—F. Cur. & St.-Hill. vol. 1, p. 82, p. 14.—Jen. Manne. (1814) p. 27, p. 33, sp. 14. p. 82, p. 47.—Cro. Once. Ros. (1813) vol. iv. p. 142.—Jen. Manna. (1893) p. 27, p. 33, sp. 14, p. 62, p. 47.—Cro. Once. Ros. (1813) vol. iv. p. 142.—Jen. Mann. (1893) p. 32, p. 32.—Jen. Mann. (1893) p. 28, p. 32.—Jen. Mar. (1894) p. 32, p. 32.—Jen. Mar. (1894) p. 34, p. 34 sp. 13.—Von der Deck. Reis. Ost-Afr. (1869) vol. iii. pt. 1, p. 8.

CAPE CAT, Forst. Phil. Trans. Roy. Soc. (1781) vol. lxxi. p. 1.—Penn. Hist. Quad. (1793) p. 291, pl. 1.

FELIS CAPENSIS, Gmel. Syst. Nat. (1788) vol. i. p. 81. sp. 14.—Desm. Nouv. Dict. Hist. Nat. (1816) p. 110.—Id. Mamm. (1820) p. 228.

SERVAL, Penn. Hist. Quad. (1793) p. 301. sp. 202.

FELIS GALEOPARDUS, Desm. Mamm. (1820) p. 227. no. 355.

CHAUS SERVALINA, Gerv., Blainv. Ostéol. Felis, t. 16.

FELIS SENEGALENSIS, Less. Mag. Zool. (1839) t. 10.—Id. Comp. Buff. (1839) vol. i. p. 409.—Id. Suppl. Buff. (1847) p. 109.—Id. Hist. Nat. Mamm. et Ois. (1847) p. 109. sp. 7.

FELIS SERVALINA, Ogilby, Proc. Zool. Soc. (1839) p. 4.—Sclat. Proc. Zool. Soc. (1860) p. 246. sp. 4.—Gray, Proc. Zool. Soc. (1867) p. 395, (1874) p. 31.—Id. Cat. Carn. Mamm. (1869) p. 24. sp. 16.

LEOPARDUS SERVAL, J. E. Gray, Cat. Mamm. Brit. Mus. (1842) p. 41.

CHAUS SERVALINUS, Gerrard, Cat. Bones Brit. Mus. p. 65.--J. E. Gray, Proc. Zool. Soc. (1874) p. 31. sp. 3.

FELIS (LEPTAILURUS) SERVAL, Severtz. Rev. Mag. Zool. (1858) p. 389.

GALEOPARDUS CAPENSIS, Fitzin. Sitzungsber. Akad. Wiss, Wien, (1869) lix. p. 649.

GALEOPARDUS SERVAL, id. ibid. p. 651.

GALEOPARDUS SENEGALENSIS, id. ibid. p. 657.

HAB. Africa, from Algiers to the Cape. Very widely spread in the plains, valleys, and hills of East Tropical Africa

This prettily marked and well-known species is a native of Africa, where it appears to be widely distributed, having been procured in Algiers on the north, and in many localities south of the Desert to the Cape. A good many different names have been bestowed upon it; and some believe that there are more than one species, distinguished by the different size and distribution of the spots and length of tail; but I have not seen any specimen among the considerable number that I have examined which seemed to be entitled to a distinct rank. Lesson described one of these animals as Felis senegalensis; and the late Dr. Gray, misled probably by the description, asked, in his 'Catalogue of Carnivorous Mammalia,' if it could be F. ricerrina. Through the kindness of Prof. A. Milne-Edwards I was enabled to examine Lesson's type specimen, which is now in the Paris Museum; and it was at once perceived to be the present species, and not in any way entitled to be regarded as distinct. Lesson, in his description (I.e.), did not compare his animal with the Serval, but with F. vicerrina, from which, of course, it was distinct. The only reference he made to the present species was in his remarks about the cars—"Amples, élevées, à bords lisses, très-poilues en dedans, et rappelant celles des Sercals." It is a perfect description of the cars of a Serval, which are remarkable for their size, the two nearly meeting when brought forward to "attention," as shown in the figure of my Plate, which was drawn from the life. Lesson's figure, although badly drawn and exaggerated, especially in the length and colouring of the tail, is that of F. serval. Another name which has been bestowed upon this species is that of serealina, Ogilby, whose type, a flat skin, is in the British Museum. This is a style with the spots more numerous and quite small, just the kind of variety met with in F. geoffreyi, mentioned in the article

FELIS SERVAL.

on that species, and which can also be found among all the species of spotted Cats. One of these was sent to the Zoological Society of London, in 1874, by Mr. Spencer Shield, from Kinsembo, on the borders of Angola and Congo. It was trapped after carrying away a rare species of stork, and brought alive to England. Mr. Spencer Shield says "It is of the same size and not unlike a Serval; long slender legs and tail; the colour is a sort of olive-yellow or sandcolour, spotted here and there with small irregular spots, more particularly along its lower extremities and flanks; its cars are black and yellow (or white), like those of a Serval." This specimen was referred by Dr. Sclater to the *F. servalina* of Ogilby, and a figure of it published in the 'Proceedings.' A specimen in the Paris Museum resembles very much the animal sent by Mr. Shield. It is covered with small spots (not so minute, perhaps, on the shoulders as are observed on those of the other individual; but all the spots are much smaller than are seen in the usual style). This one came from Sierra Leone, and was but one of the intermediate forms observed in the collection. I do not consider Mr. Shield's animal, from any character exhibited by it at present, to be distinct from the true F. serval; but of course, before the question can be regarded as satisfactorily settled, we must wait till the animal's death, and then see if the skull exhibits sufficient difference to give the creature an independent specific rank. Specimens of the Serval vary greatly from each other both in their size and coloration, some being half as large again as others. Neither of these appears, however, to have any specific value; nor do they constitute even local races, because individuals from the same place are often very unlike. For instance, there is in the Paris Museum a specimen from the Cape of Good Hope, collected, I believe, as well as presented by the late J. P. Verreaux-which is of large size, marked with very large conspicuous black spots, and the ground-colour of a general light buff,—and also another, presented by the same gentleman, from the same locality, small in size, dark buff in colour, and covered with quite small black spots. Both are apparently adult. Other specimens are marked with stripes on the upper part of the sides, instead of spots; and, in fact, it is no easy matter to obtain two that

Fur rather long and soft. General colour bright baff, in some individuals it is inclined to rufous. Back striped with labels; shouldness also having one or two back strips, which run diagonally along the flanks. A broad black line on each side of the hind part of the neck passes to the shoulders, with two or three smaller ones between them. Lower part of shoulders, flanks, and hind quarters marked with black spots, varying in size in different specimens, which extend along the lega, growing very small as they approach the feet. Checks spotted with black. Threat white, a black line across the entire londer parts buff white, spotted with black. Two black has inside the upper part of fore legs; inside of hind legs spotted with black. Hind part of cars black, with a white mark in the ecurre, nearly passing across the entire width. Tall long, with long fur, same colour as the back, a black stripe down the centre, and usually with six black rings distributed along the entire length; the number, however, varies among individuals.

Total length from nose to root of tail 35 inches, tail 9 inches.

The skull of the Serval is long and narrow, the upper border in the profile view arching gradually and evenly. Face on a level with the forehead. Noasi fat, or slightly depressed medianly. Premantilla broad, extending a third of the way between massle and maxilles. Orbits incomplete, with the interovitial space broad. Brain-case oblong, rounded, with an some than in others. Zygons broad, curving well outwards, affording roun for a powerful masseter musele. Infraorbital formers slightly oblong in shape. Lower outline of ramus curving upwards asteriorly to the sympleysis. Superior causes rather feedle and short. Analitys plutia largely proad on their posterior end, accurated and rather pointed anteriorly. The masteid formanse contracted, and presenting a nearly linear opening. The external auditory formanse very large, nearly round, and open.



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FFIIS SERVAL

FELIS EUPTILURA.

THE BUSHY-TAILED RED-SPOTTED CAT.

FELIS UNDATA, Radde, Reisen im Siden von Ost-Sibrien, (1869) p. 166, pl. 4?

FELIS EUPTILURA, Elise, Prec. Zool. Soc. (1871) p. 761, pl. taxi—J. E. Gray, Ann. & Mag. Nat. Hist. (1874) vol. xiii. pp. 54 & 472.

FELIS MICROTIS, Alp. Milne-Edwards, Recher. des Manna. (1872) pl. xxxi. R. fg. 1, p. 221.

FELIS BECOLORATA, Alp. Milne-Edwards, Recher. des Manna. (1872) p. 223.

HAB. China. Pekin and Canton (FONTANIER). Shanghai (Gray, Brit. Mus. spec.). Siberia?

This species, described by me in 1871 from a very poor and imperfect skin, without any portion of skull, is apparently an inhabitant of the more northern parts of China, and also of Shareira, as it was precured by Raddle in the latter country. I am inclined, after careful examination of the types, to connect with this the P nearests and P tendents of A. Milno-Edwards, precured by M. Fontanier in China from the neighbourhood of both Pekin and Canton. If I am correct in my avarians, the names bestowed by Maou. A Milno-Edwards, while have to become synonym, as my description was published in the Proceedings of the Zoological Society of Loudon' nearly a year previous to the issue of the Part of his words or Manmals to contains this species. It is an extremely are animal in collections, the type and one example in the British Museum, and the two specimens in the Paris Museum, being all that are known. In the *Annals and Magazine or Natural History' for 1874, vol. 1811, 94.72, Dr. J. E. Gruy stated that a wild Cat from Shanghai had been received at the British Museum which he was inclined to regard as a perfect specimen of my P. espithers; the only difference between the kin and Mr. Welf's figure published in the Porc. Zool. Soc. (Edy) pl. 70; is that in the former the streaks on the errors and nage are not so wide and the tail is longer and more cylindrical. These differences, however, are naturally to be looked for, as

The following is my description of the type of this species (l, e, t):—"Ground-colour of the body light brownish yellow, strongly mixed with grey, covered with redshis brown spots rather oblong in shape, darkest and most conspicuous on the hind quanters; lead gray, with a white line under the eye and on the side next to the nose; two dark brown stripes in the centre, communeling at the top of the nose, and one on each side, beginning at the eye, pass over the top of the head, and down the back of the neck to the shoulders; a darker destripe from the corner of the eyer may back caress the head, and down the back of the neck to the shoulders; a dark red stripe from the corner of the spectra of the back of the entry of the back is much darker than the sides, with spots of dark brown. Under curves back under the throat. The centre of the back is much darker than the sides, with spots of dark brown. Under lip white, as is also the throat and underparts. Across the upper part of the breast are four broken bands of foxy red; lip white, as is also the throat and underparts. Across the upper part of the breast are four broken bands of foxy red; bands of foxy red; and covered with angre brown spots, becoming refusu between the hind legs. Inner side of hind legs both, with cross belly covered with large brown spots, becoming refusus between the hind legs. Inner side of hind legs both, with cross the upper part of the breast are four broken bands of foxy red; and covered with snall redshis spots to the toes. Tail thick, rather short, bustly, darker than the body, with several incomplete broken rings of blackish brown. Inside of our buff, behind black. In size the animal appears somewhat larger than the ordinary domestic Cat."

somewhat larger than the ordinary oministic char.

The E. macrolio of A. Milin-Edwards, represented in the Plate by the front figure, is slightly smaller than the type, and redder in its general coloration; but I cannot distinguish any character sufficient in my opinion to separate it specifically. The ears are not smaller in proportion than those of the type. The specimen may be described as follows:—

Hie can an instance in proportion that mose of the type. The appearance may be exceeded and back. A white line on each side of the nose. Four dark-hown lines run along the top of the head to the lower part of hind neck. Ears belind black, edged at their tips with yellowish white, and a white spot in the centre, the besal portion dark bown. Belind black, edged at their tips with yellowish white, and a white spot in the centre, the besal portion dark bown. Entries body covered with reddish spots, some with dark brown centres, more especially as they approach the loins. Entries body covered with reddish spots, some with dark brown centres, more especially as they approach the loins. Checks, throat, breast, and belly white. Two red lines from the eye to beneath the ear cross the checks; the throat and Checks, throat, breast, and belly white. Two red lines from the eye to beneath the arc reson the checks are the throat and brown spot by several more of the same han, while the belly is covered with reddish brown spots. Legs yellowish brown, fairly spotted on the outside; one or two black hars cross near the top of the fore legs inside. Tail moderately brown, fairly spotted on the outside; one or two black how runspa, and tips also dark brown. Nose to root of tail 19; long, budy, dark growish with numerous indistinct dark brown rings, and tips also dark brown. Nose to root of tail 19;

FELIS EUPTILURA.

inches. Tail 10]. The example described above came from Canton, and is in the Paris Museum. The skull fortunately accompanied the specimen described by Dr. Gray, and possess large bulls, and a deep subcircular cavity on the inside of the back part of the canines, and small tubercular grinder. The cevipilar region is wanting. The massla are broad, extend considerably beyond the processes of the maxilia, and are rounded at their articulation with the frontal bone. The processes of the profreadar lears he short distance downwards between the assals and maxilie, and those of the premaxiliar about one third the length of the massla upwards. The orbits are incomplete. Infraorbital foramina contracted slightly, oblong in shape. Bersin-usee fall and rounded. Interorbital space narrow. Lower outline of inferior ramus nearly straight throughout its length. Stall in British-Messen collection.

As already stated, the figure on the right side of the Plate is a portrait of the type of F. macrotis, A. Milne-Edwards. The other is that of my type of F. cuptilura.



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FELIS EUPTILURA.

M&Nianhert. up.

FELIS JAVENSIS.

THE LITTLE RED-SPOTTED CAT.

- FELIS JAVANENSIS, Deam. Nowv. Diet. Hist. Nat. (1810) vol. vi. p. 115.—1d. Mamm. (1820) pj. 229. no. 388.—Hersf. Zool. Resear. (1824) pl.—Cur. Gonem. Poss. (1823) vol. vi. p. 483.—E. Cvu. Hist. Mamm. (1820) vol. vi. pj. 127.—Grift. Anim. King. (1827) vol. vi. p. 484.—Soo. Man. Mamm. (1877) pp. 189. op. 200.—Fisch. Sym. Mamm. (1920) pp. 205. vir. a. vir. Sym. Mam. Hist. (1898) pp. 686.—Java Nat. Elbe vol. vir. pl. vir. —Swini. Anim. Menag. (1883) pp. 129.—Less. Compl. Buft. (1893) vol. i. p. 410.—Hersf. Cak Mamm. Man. E.-Buft. Oc. (1831) pp. 488. pp. 376.—L. Gon. (2870) vol. pp. 2774—Id. Cat. Cat. Mamm. (1899) pp. 58, sp. 19.—Id.
- FELIS SUMATRANA, Horsf. Zool. Resear. (1824) pl.—Cuv. Ossem. Foss. (1825) vol. iv. p. 436.—Griff. Anim. King. (1827) vol. ii. p. 484.— Fisch. Syn. Mamm. (1829) p. 205, var. 3.-Vig. Mem. Raffl. (1830) p. 636.-Jard. Nat. Libr. vol. xvi. pl. xviii.-Swain. Anim. Menag. (1838) p. 130.—Less. Compl. Buff. (1839) vol. i. p. 410.—Horsf. Cat. Mamm. Mus. E.-Ind. Co. (1851) p. 48. sp. 79.—Gerv. Nat. Hist. Mamm. (1855) p. 86.—Gray, Proc. Zool. Soc. (1867) p. 400.
- FELIS UNDATA, Less. Man. Mamm. (1827) p. 188. sp. 502,—Fisch. Syn. Mamm. (1829) p. 205. sp. 18.
- FELIS DIARDI, Cuv. Ossem. Foss. (1825) vol. iv. p. 437.—Griff. Anim. King. (1827) vol. ii. p. 484, pl. fig. 1.—Less. Man. Mamm. (1827) p. 189. sp. 505.
- FELIS MINUTA, Temm. Mon. Mamm. (1827) vol. i. p. 130.—Less. Man. Mamm. (1827) p. 189. sp. 504.—Jard. Nat. Libr. vol. xvi. p. 215. text.—J. E. Gray, Proc. Zool. Soc. (1867) pp. 274, 400.—Id. Cat. Carn. Mamm. (1869) p. 26.—Id. Ann. Mag. Nat. Hist. (1874) vol. xiii.
- FELIS MINUTA, var., Temm. Mon. Mamm. (1827) p. 130.
- FELIS CHINENSIS, J. E. Gray, Ann. Mag. Nat. Hist. (1837) p. 577.—Id. Proc. Zool. Soc. (1867) pp. 274, 400.—Id. Cat. Cara. Mamm. (1869) p. 27. sp. 22.—Swinh, Proc. Zool, Soc. (1870) p. 629.—Gray, Ann. Mag. Nat. Hist. (1874) vol. xiii. p. 53.—Alph. Milne-Edw. Rech. Mamm. p. 216, pl. 31 b. fig. 2.
- CHAUS SERVALINUS, J. E. Gray. Cat. Mamm. Brit. Mus. (1842) p. 45 (exclus. syn.).
- LEOPARDUS JAVANENSIS, J. E. Gray, Cat. Mamm. Brit. Mus. (1842) p. 43.
- LEOPARDUS SUMATRANUS, J. E. Gray, Cat. Mamm. Brit. Mus. (1842) p. 43.
- LEOPARDUS CHINENSIS, J. E. Gray, Cat. Mamm. Brit, Mus. (1842) p. 43.
- LEOPARDUS REEVESI, J. E. Gray, Cat. Mamm. Brit. Mus. (1842) p. 44.
- FELIS CATUS, var. \$\beta\$. JAVANENSIS, Less. Nouv. Tab. Règn. Anim. (1842) p. 54. FELIS (PRIONAILURUS) MINUTA, Severtz. Rev. Mag. Zool. (1858) p. 387.
- FELIS BENGALENSIS, var., Blyth, Proc. Zool. Soc. (1863) p. 184.
- FELIS SERVALINA, J. E. Gray (nec Ogilby), Proc. Zool. Soc. (1867) p. 401. PANTHERA SUMATRANA, Fitzin. Sitzgsber. Akad. Wiss. Wien, (1868) lviii. p. 491.
- PANTHERA JAVANENSIS, id. ibid. p. 493.
- PANTHERA NUDATA id ibid, p. 496.
- PANTHERA SMITHII, id. ibid. p. 499.
- PANTHERA ANGULIFERA, id. ibid. p 500.
- PANTHERA CHINENSIS, id. ibid, p. 509.
- FELIS HERSCHELII, J. E. Gray, Cat. Carn. Pachyd. & Edent. Mamm. (1869) p. 28.

HAB. Malacca, Sumatra, Java, Borneo, China, vicinity of Canton.

Great confusion has always existed respecting the small Spotted Cats found in some of the islands of the Eastern Archipelago as well as on the continent of Asia; and this has been mainly caused, as it seems to me, either from the desire of naturalists to recognize a number of species among them, or an unwillingness to believe that an animal inhabiting Sumatra, for instance, can be specifically the same as one found amid the cold regions of North China. Since it has been proved, however, that the Leopards and Tigers of Africa and India are of the same species as those dwelling in the far northern districts of the



Wilf & J Smit, del et lith.

1 mar F. CHINENSIS.

2 par F. SUMATRANA

MAN Hanhart map

DDITO THE STREET

FELIS RUBIGINOSA.

RUBIGINOUS CAT.

FELIS RUBIGINOSA, J. Geoff. Bdang. Voy. Ind. Orient. (1834) p. 140, pl. 6.—Less. Compl. Buff. (1839) vol. i. p. 410.—Id. Nouv. Tab. Règn. Anim. (1842) p. 54. sp. 533.—Blyth, Proc. Zool. Soc. (1863) p. 183. sp. 12.—Jerd. Mamm. Ind. (1867) p. 108. sp. 113.—Elliot.

LEOPARDUS SUMATRANUS, J. E. Gray, Cat. Mamm. Brit. Mus. (1842) p. 43.

FELIS JERDONI, Blyth, Proc. Zool. Soc. (1863) p. 185.—J. E. Gray, Proc. Zool. Soc. (1867) pp. 274, 401.—Jerd. Mamm. Ind. (1867) p. 107. sp. 111.—Gray, Ann. & Mag. Nat. Blst. (1874) xiii. p. 54.

VIVERRICEPS RUBIGINOSA, J. E. Gray, Proc. Zool. Soc. (1867) p. 269.—Id. Cat. Carn. Mamm. (1869) p. 18.

PANTHERA RUBIGINOSA, Fitzin. Sitzungsber. Akad. Wiss. Wien, (1868) lviii. p. 502.

Vereura-possy, Tamil; Coolla-deeya, Singhalese (Ноложовти).

HAB. Peninsula of India, Coromandel side (BLYTH). Cevlon (HOLDSWORTH).

FELIS RUBIGINOSA is a species common in certain parts of India, and comparatively lately has also been recognized as a native of Ceylon. Although at first only known to possess a light colour of fur, as seen in most Indian examples, it is now ascertained to have representatives of a darker hue and more distinct spots, as is the case with most of the other species of this family. Jerdon says that he only procured this animal in the Carnatic, in the vicinity of Nellore and Madras, and that he never heard of it in Central India or on the Malabar coast. He states that this species frequents the grassy beds of tanks, brushwood, and sometimes drains in the open country and near villages, but does not inhabit the jungles. He possessed one that was very tame, very elegant and playful in its motions, and of an activity that was marvellous. When about eight months old it was brought into a room where there was a small fawn of a gazelle; and the little creature flew at it at once, seized it by the nape, and was taken off with difficulty. It used to make its way into the rafters of bungalows, and hunt for squirrels. Jerdon further states that he had seen several undoubted hybrids between this species and the domestic Cat. In Ceylon this animal appears to be rare in the northern districts, Mr. Holdsworth having been able to obtain only one specimen in that part of the island; but in the southern part, in the vicinity of Kandy, it appears to be more often met with. The gentleman just named says that the habits of F. rubiginosa are apparently the same as those of its relatives, as is shown by its stealthy walk and watchful looks above and around it; and it is also very tenacious of life; for one example shot by him, although hit all over with large shot, fought so fiercely that it was some minutes before it could be touched with safety. It is found more frequently in the hills than elsewhere in Ceylon; and Mr. Holdsworth saw three specimens killed within a few miles of Kandy, probably at an elevation of 1500 to 2000 feet. The general colour of these was a light greyish fawn, striped on the head and back, and spotted on the sides and legs with bright rusty brown. Dr. Kelaart says that specimens of this Cat from Nuwara Eliya (6000 feet) are darker-coloured and more spotted [more distinctly spotted?] than those from a less elevation. Mr. Blyth (l. c.) described a dark-coloured variety with dark spots as Felis jerdoni, the type of which is now in the British Museum. A specimen of this style was sent to Mr. Holdsworth from Ceylon, collected, as he believes, near Kandy, in the same district from which his lighter-coloured specimens came, and not from any of the higher hills. This, together with Mr. Holdsworth's other specimens, was taken to the British Museum by myself; and in the presence of Mr. Blyth and Dr. Jerdon they were all compared with F. jerdoni; and it was decided that the last so-called species could not stand as distinct, but was only a dark form of F. rubiginosa. The back figure in my Plate is taken from this dark-spotted Ceylonese specimen; and the front one represents the usual style found

in India.

General colour pale yellowish brown, covered sparsely with reddish spots. The usual stripes over the head and down
the back of the neck dark brown, sometimes extending the length of the back, or broken into coblong spots towards the
hind quarters. Line between the nece and the eye, lips, threat, breast, and entire underparts pure whire, faintly barred

upon the breast with rufous; inner side of front legs crossed with two bars of blackish brown; belly spotted with the same, and inner side of hind legs crossed with two bars of dark rufous brown. Two lines of red cross the cheeks, one starting from behind the eye, the other just below, and extending beneath the ear. Tail slender, rather long, same colour as the back, unspotted. Back of ears black, with a rufous spot in the centre. Paws and lower part of legs yellowish brown, indistinctly spotted on front legs with red.

Entire length 171 inches, tail 81.

The above description answers to the usual style of this Cat; but, as with the other species of the spotted members of this family, individuals vary greatly, some being even paler than the one here described, while others are very dark and conspicuously spotted with blackish brown. It was from this latter style that Blyth described his F. jerdoni, which may be deemed the extreme limit of the dark variety of this species. Another specimen before me, intermediate between the one just described and the F.-jerdoni style, is rufous brown, the hairs tipped with grey; the stripes over the head and spots upon the back are black, while those on the flanks, shoulders, and hind quarters are rufous. The stripes on the cheeks are brownish black. Entire underparts white, with the stripes on the breast, inside of fore and hind legs, and spots on the belly jet-black. Back of ears black, with a rufous spot in the centre. The tail is reddish brown, unspotted. Both of these specimens came from Ceylon.

The facial region of the skull of this species is short, and in a line with the forehead. Nasals very long and narrow, and at their articulation with the frontal bone extend beyond the processes of the maxillæ. Præmaxillæ rather broad, their processes separating the nasals from the maxillæ for about one fourth the length of the former. The maxillæ are broad, and their processes square at their upper posterior border. Orbits nearly complete. Infraorbital foramen round and open. Brain-case full and evenly rounded, with a slight postoccipital crest. Auditory bullse large and prominent, the mastoid foramen narrow and oblong in shape. Lower outline of ramus curving slightly upwards in its anterior half, with a slight swelling downwards beneath the molars. Canines rather large for the size of the animal; the molar series moderate.



FELIS CATUS.

THE EUROPEAN WILD CAT.

FELIS CATUS, Lim. Syst. Nat. (1776) vol. 1, p. 6.—ELI Syst. Rig. Alim. (1777) p. 38 s. p. 12.—Gond. Syst. Nat. (1789) vol. 1, pi.1, p. 8.0 s. ps. 5—Bill Zoog, Rosso-Scialt (sill) vol. 1, p. 32.—Pechok. Zoog, (1849) p. 225, ps. 11.—Donn. Neav. Bot. Hills. Nat. (1846) p. 115.—Donn. Mannu. (1890) p. 221 no. 366, pl. 18. Sgs. 1-3, p. 16. Sgs. 1-3.—Cerv. Oceme Poss. (1820) vol. 1; p. 437.—Jard. Nat. Libr. vol. 194, p. 184, p. 184; p. 185; p. 185; p. 184; p. 185; p. 185; p. 184; p. 185; p. 185;

FELIS SYLVESTRIS, Schreb. Säugeth. (1778) Th. iii. p. 397, tab. evi.

COMMON WILD CAT, Penn. Hist. Quad. (1793) p. 295. sp. 195.—Bingl. Brit. Quad. (1809) p. 138. no. 11.

HAB. Great Britain. Ireland? Western Europe generally, where extensive forests exist. Northern Asia. Asia Minor (DANFORD).

DAYROND obtained a male and a female of this Cat among the rocks neer Zebli, in kais Minor, at an elevation of 3000–4000 feet. According to the natives, they are not uncommon. They appear to subsist upon a species of mouse (Mas suytaciana), fourteen of which were found in the stomach of one of these Cats. The skins of the Asia Minor specimens had the ground-colour a clearer grey, and the markings of the flanks more broken into distinct spots than is seen in European examples; but I could discent mothing about them to indicate a form needing to be separated from the European Wald Cat.

Felis catus, in many localities, is becoming scarcer every year, and is gradually disappearing from some in which, not long since, it was not uncommon. Various are the causes that have effected this; probably the chief one is the constant persecution to which the animal has been subjected, as this species has but few friends, and no quarter is shown when it is met with in the forest. Bell, in his 'History of British Quadrupeds,' states that this Wild Cat is possessed of great strength, and is very fierce, and to be obliged to encounter it is a matter not unattended with danger, especially if the creature is wounded. The female is rather smaller than the male. She constructs her nest in the hollow of a tree or in a cleft of the rocks, and, as related by Sir William Jardine, has even been known to make use of the nest of some large bird. The litter consists of four or five young. It is said that individuals from Russia and Northern China are of larger size than those from southern countries, and the fur is held in great esteem. My friend the late E. R. Alston sent me the following account of the distribution of this species in the British Islands:-"It is always difficult to determine the range of the Wild Cat, as it is so constantly confounded with domestic Cats run wild; but it appears to have been anciently widely distributed throughout Britain. Fossil remains have been found in various localities, as in brick-earth, in Essex, and in Kent's Hole, Devonshire (Owen, Brit. Foss. Mamm. p. 172). It still seems to linger in some of the more secluded parts of the north and west of England, and in Wales. One weighing 9 lb., taken on the estate of Bulk, Lancashire, is recorded in the 'Zoologist' for 1849, p. 3408. Mr. J. W. Jones stated, in the 'Field' of 3rd Jan. 1863, that a Wild Cat of 11 lb. was trapped in Montgomeryshire in Dec. 1864 (Zoologist, 1865, p. 9431). Rusticus, of Godalming, asserts in his 'Letters,' that 'a real genuine Wild Cat' was taken near that place; but the fact seems to require confirmation. In Scotland it appears never to have been an inhabitant of any of the islands, although it is mentioned in Pennant's 'Tour' as a native of Arran (cf. Bryce's Geology of Arran, p. 313); and, so far as I am aware, it is now completely extirpated in all the counties south of the Forth and Clyde. North of that line it is still not unfrequent in some of the wilder mountainous districts, the most southern limit of its range having till lately been the shores of Loch Lomond, where, however, it has been exterminated within the last ten years. Mr. Maegillivray considered it to be most abundant in the counties of Perth, Aberdeen, and Argyle (Nat. Libr. vol. xvii. p. 194);

FELIS CATUS.

it is at least as plentiful in Ross, Cromarty, and Sutherland; but, like most of the Highland vermin, its numbers have everywhere been much reduced by trapping. It still finds a comparatively safe retreat, however, in the solitudes of the great deer-forests. Its gaelie name is Fiadehait. As regards Ireland I have no knowledge of its range; Mr. Thompson seems to have been doubtful as to its existence there (Nat. Hist. Irel. vol. iv. p. 11); but according to Mr. Andrews it was formerly well known by the name of Cat-Fiadhachd in the wilder parts of co. Kerry (Zoologist, 1854, p. 423). In Scotland the favourite resorts of the Wild Cat are the birch-woods and coppices along the shores of the lochs; but it is also found on the bare hill-sides, where it lives in the cairns of stones and boulders. Only very rarely, when hard pressed by hunger, will it approach the dwellings of mankind. It is not very flect of foot; and if surprised at a distance from the shelter of trees or rocks, it will turn on either man or dog: an instance of this is well related in the late Charles St. John's 'Wild Sports of the Highlands.' The best general accounts of the habits of this species which I have seen are those given by Prof. Blasius (Sängethiere Deutschlands, p. 165-6) and F. von. Tschudi (Thierleben der Alpenwelt, pp. 205-207). Herr Dönetz has pointed out that the cranial differences between the Wild and the Domestic Cat given by Blasius (l. c. p. 160) are not constant; and I can fully confirm the observation. In two skulls of F. catus (one in my own collection, the other in the Museum of the College of Surgeons) the frontals and squamosals do not come in contact, being separated by conjoined processes of the parietals and alisphenoids, thus presenting the most important characters attributed to the tame Cat by Blasius.

Possil remains of this species have been found in various places in Great Britain, viz. in the Cave of Kirkdale by Dr. Buckland, and in Kent's Hole by the Rev. J. Mae Enery,—also from the brick-earth of Gray's Thurrock, in Essex. These belong to the Pleistocene epoch, and present no differences whatever from those of the existing species.

Fur rather long, soft. General colour dark grey, with black lines on top of head and down the back. Two black lines on check, and two or three bands of same on outside of fore and hind legs. Underparts inclined to rafous. Tail long and bushy, same colour as the body, with several rings, and tip for about two inches black. The rings do not extend entirely around the tail, the underpart of which is light grey or rufous. Nose to root of tail 23; inches. Tail 11j in.

The skull of the Wild Cat is short and broad, with a large evenly rounded brain-ease, wide interorbital space, short broad nasals, and a flat forchead. In some skulls the frontals and squamonals are in contact; but this is not always the case, for it is not very unusual to meet with specimens having these parts separated by the processes of the parietials and aliaphenoids as mentioned by Mr. Alston: I have seen several skulls where this state of affairs existed. The face is short, and lies below the level of the forchead. Upper cannies moderate in size.



JWolf & JSmit, del. et lith

FELIS CATUS.

FELIS CAFFRA.

THE CAFFER CAT.

BOOTED LYNX, Bruce, Voy. (1790) vol. iv. pl. 30, p. 173.

FELIS CAFFRA, Desm. Suppl. (1820) p. 540.—Less. Man. Mamm. (1827) p. 187. sp. 497.—Fisch. Syn. Mamm. (1829) p. 206. sp. 20.—F. Cuv-& St.-Hil. Hist. Nat. Mamm. (1812) vol. ii. pl. 129.—Less. Compl. Buff. (1839) vol. i. p. 409.—Less. Nouv. Tab. Règn. Anim. (1842) p. 54. sp. 532.—Gerv. Nat. Hist. Mamm. (1855) p. 87.—Gray, Proc. Zool. Soc. (1867) p. 273.

FELIS OBSCURA, Desm. Mamm. (1820) p. 186, sp. 496 (black var.).—F. Cav. & St.-Hil. Hist. Nat. Mamm. (1842) vol. ii. pl. 128.—Less. Man. Mamm. (1827) p. 186, sp. 496.—Id. Compl. Buff. (1839) vol. i. p. 410.

FELIS NIGRIPES, Burch. Trav. (1822) vol. ii, p. 592.—Griff. Anim. King. (1827) vol. ii, p. 486.—Fisch. Syn. Mamm. (1829) p. 214.—Less. Compl. Buff. (1839) vol. i. p. 410.

FELIS MANICALIAR, Ripp, Zool, Adi. vol., i. (1820) tab. 1.—Tenm. Mon. Manm. (1827) vol. i. p. 128.—Less. Man. Mamm. (1827) p. 187. up. 429.—Flick. Syn. Mamm. (1897) p. 186. p. 21.—Janl. Nat. Libr. vol. vil. p. 227.—Elikar. Ontdo. (1828) e-64) vol. ii. Ath plo. ix., xiv.—Less. Compl. Baff. (1820) vol. i. p. 410.—St.—Hi. Jaco, Voy. Inde. (1817) p. 53.—Grav. Nat. Hist. Manm. (1850) p. 88.—Gray, Flor. God. Sec. (1857) pp. 274, 675.—Jesse. Pote. Zool. Sec. (1859) p. 117.—Blant. Zool. Abyrs. (1879) p. 276.

FELIS CALIGATA, Isid. Geoff, Jacq. Voy. t. 3, figs. 1, 2 (skull),—F. Cav. & St.-Hil, Hist. Nat. Mamm. (1826) vol. ii. pl. 132.—Temm. Mon. CALIGATA, 166 Good. Joog. Voy. 1, 8, 198; 1, 2 (MAIII)—T. URI. C. 85-111. IEEE, volt. Jammin (1987) vol. 1, pc. 183, Appeda, p. 287—Lees. Man. Mann. (1987) vol. 187; Priche S, ya. Mann. (1997) vol. 1, pc. 183, Appeda, p. 287—Lees. Man. Mann. (1987) vol. 187; Priche S, ya. Mann. (1999) pp. 398, 98, 34-Jard. Nat. Libr. vol. xvi. p. 284, pl. xvi.—Suntu, Dissert. Zool. (1930) p. 30.—Lees. Compl. Biof. (1839) vol. 1 p. 411—28-Lill. Josq. Voy. dans. Tibrd. (1847) p. 40.—Leev. Xvi. p. 284, pl. xvi.—Suntu, Dissert. Zool. (1930) p. 57.—Kirk. Proc. Zool. Soc. (1864) p. 633, sp. 30.—Gray. Cat. Carm. Mann. (1859) p. 29, sp. 29.—Bind. Zool. Adyus. (1879) p. 228.

FELIS PULCHELLA, Gray, Ann. & Mag. Nat. Hist. (1837) p. 577.

CHAUS CAFFER, Gray, Cat. Mamm. Brit. Mus. (1842) p. 45.

LEOPARDUS INCONSPICUUS, Gray, Cat. Mamm. Brit. Mus. (1842) p. 44 (hybrid).

FELIS CHAUS, Rüpp. Atl. vol. i. t. 140.

FELIS CAFRA, St.-Hil. Jacq. Voy. dans l'Inde, (1847) p. 53.

FELIS LYBICA, St.-Hil, Jacq. Voy. dans l'Inde, (1847) p. 56,—Gerv. Nat. Hist. Mamm. (1855) p. 87.

FELIS MARGARITA, Loche, Rev. Zool. (1858) p. 49, pl. i.—Id. Cat. Mamm. Algér. (1858) p. 9, sp. 18.

PELIS (CATOLYNX) CALIGATA, Severtz, Rev. Mag. Zool. (1858) p. 389.

FELIS INCONSPICUA, Gray, Proc. Zool. Soc. (1867) p. 273.—Id. Cat. Carn. Mann. (1869) p. 31, sp. 30 (hybrid).

HAB. Africa generally, from Algeria to the Cape.

FOSSILS.

FELIS CAFFER, Dawk, Brit, Pleist, Mamm., Paleont, Soc. Lond. 1866, p. 183, pl. xxiv. fig. 8 c. FELIS FERA, Marcel de Serres, Oss. Foss. Luncl-Viel, p. 120, pl. ix, figs. 12, 13, 17. PELIS CATUS MAGNA, Schmerl. Oss. Foss. Lifge, vol. ii. p. 88, pl. xviii. figs. 13, 14, 23, 24.

Loc. Cave of Luncl-Viel (De Serres). Caves of Liége (Schmerling). Bleadon Cave, Mendip Hills, England (DAWKINS).

THE Caffer Cat, which to-day is a native of Africa only, was found in Pleistocene times in France, Belgium, and Britain. The fossil remains of this animal that have been obtained are but few in number, it is true, but they are apparently sufficient to prove that they belonged to a Cat identical with the existing F. caffra. M. Marcel de Serres (l. e.) and Dr. Schmerling (l. c.) give figures of a lower jaw, and refer them respectively to F. fera and F. catus magna, probably meaning the Wild Cat, F. catus. Messrs. Davkins and Sandford consider the remains described by the authors mentioned above as too large for a lower jaw of any Wild Cat that they have seen. The right lower jaw from Bleadon Cave, which they themselves

FELIS CAFFRA.

figure, differs from those of all the lesser Cats and Lyaxes by the small size of the molar series as compared with the depth of the jaw. The E. chons, with which it was compared, differs in having the lower true molar larger in proportion to the premoints. The F. cotos differs in having the posterior inner alvolar border much thickened, and rising higher than the outer border, so that the last true molar and also, to a certain extent, premolar 4 are thrown to the cestistic of the jaw. With the F. coffers, however, the jaw agreed in the minutest particular, as well as with those@jured by M. de Serves and Dr. Schmerling; and therefore Messrs. Dawkins and Sandford deemed it impossible to resist the conclusion that a species of Wild Cat most closely allied to the F. coffer lived in British, Belgium, and France in the Febstocence period.

Living examples of the Caffer Cat exhibit a great variety of coloration, from pale fulvous to dark grey; and the species is distributed generally throughout Africa. It is the "Booted Lynx" of Bruce, although the figure given by that author is not very characteristic. He states that the skins were principally used by the natives for cloaks, and that the animal was called Kakikaan. Many hybrids have been procured between this species and the Domestic Cat, some of which have been described as distinct, and thus added considerably to the synonymy. Rüppell described a specimen which he procured in Nubia as Felis maniculata. It was of a dark grey colour, with very faint stripes on the legs. This, however, is only one of the forms exhibited by this species. In the British Museum are several specimens of this Cat, varying considerably from each other in their colour and markings, and also some hybrids, one of which was named by Dr. Gray F. inconspicua, although he imagined it might be either a Domestic Cat or hybrid (vide Cat. Mamm. p. 31, 1869). Blanford procured this Cat in Abyssinia, and states, under the name of F. caligata, that it agrees exactly in the character and coloration of its fur with Cape specimens. He also obtained a single specimen at Zoulla, which he has called F. maniculata, and which was very much smaller than the other example procured at Adigrat, about 8000 feet above the sea; and he thinks that no naturalist, looking at these two examples only, would consider them to be the same species. It is just this fact that has created so much confusion in the nomenclature of the Felidæ; for specimens that varied from the types have been described as distinct, the author not having had access to any series of individuals, which would have shown that differences of colour and markings, as well as size also, in many instances in the same species, were the rule and not the exception. It is only from the examination of a good many examples from various localities that a correct idea may be obtained of the specific value of any form in this family. Loche (i. c.) described a specimen of the present species obtained by him in Algeria as F. margarita. It is of the pale fulvous form. The tail in his figure is rather too long, as it is not much over one half the length of the body in reality, being 28 centimètres to 45 centimètres. He says that he met with it in the environs of Négouça (Sahara) in a very sandy locality. The individual described was apparently the only one seen.

In the accompanying Plate is given a figure of the typical form of this species.

General colour pale fulrous to dark grey, some specimens having a rich rufum tinge; centre of the back striped with hack. Legs of the same colour as the body, ringed with black, varying in extent and intensity in different individuals. Tail long, dark grey, the tip for about an inch and a half black, preceded by two or three irregular rings of the same colour. In some specimens there is a black line on the centre of the tail above for its entire length. Two indistinct rufuss lines from behind the eye to the car. Threat, breast, and underparts white in some, rufuss in other examples. Length, nose to root of tail 26 jichests, and 13 index

Sometimes individuals of this species are seen having the entire body and loins ringed with rufous, becoming black upon the loins and legs. The tails of such specimens have usually three or four distinct black rings towards the ends; and the general hue of the entire animal is darker than that of those I have here first described.

The young resemble the adults. Occasionally dark varieties of this species are met with, being of a very dark, almost black rufous-brown over the entire body, the rings and shadings being black.

The profile of the skull forms a regular gradual curve in its upper broker. Neash long and flat. Intereditial space wide; brain-uses rounded, with the squamousla prominent, containing outstands, the curve of the particular. Orbits incomplete. Inner adveolar border posteriorly rises higher than the outer, thus foreing the set molar to the outside of jaw. Interedition from the outer side, but rather flat on the inner. Lower outline of ramus straight for two thirds its height, rising gradually to the symphysic. Auditory bolle large, prominent, broadest on their posterior cell. Curius moderate in size.



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FELIS ORNATA.

THE DESERT-CAT.

FELIS ORNATA, Gray, Illustr. Ind. Zool. (1832) t.—Id. Ann. & Mag. Nat. Hist. (1837) p. 577.—Jard. Nat. Libr. vol. xvi. pl. 25.—J. E. Gray.

FELIS SERVALINA, Jard. Nat. Libr. vol. xvi. p. 232.

CHAUS PULCHELLUS, Gray, Cat. Mamm. Brit. Mus. (1842) p. 45.

CHAUS SERVALINUS, id. ibid.

FELIS (CATOLYNX) TORQUATA, Severtz. Rev. et Mag. Zool. (1858) p. 387.

FELIS HUTTONI, Blyth, MS.

FELIS TORQUATA, Horsf. Cat. Mamm. Mus. E.-Ind. Co. (1851) p. 49. sp. 81,—Blyth, Proc. Zool. Soc. (1863) p. 185. sp. 16.—Jerd. Mamm. Ind. (1867) p. 110.-M'Masters, Notes, Jerd. Mamm. Ind. (1870) p. 35.

CHAUS ORNATUS, J. E. Gray, Proc. Zool. Soc. (1867) p. 278.—Fitzin. Sitzgiber. Akad. Wiss. Wien, (1868) lix. p. 175.—Gray, Cat. Carn. Mamm. (1869) p. 35, sp. 2.

Hab. Dukhun, and other parts of India (Horsfield). Desert regions of North-west India, Dukhun, Hazara country

THIS is a very peculiar and well-defined species of this family, and was first described by Dr. J. E. Gray (l. c.). It is essentially a desert-animal, and lives among the sandhills or barren plains. According to Jerdon the fur is rather dense, and the markings much brighter and more distinct in some specimens than in others. Examples sent by Capt. Hutton from the Salt range of the Punjaub and Hazara vary somewhat, and the markings take the shape of ill-defined stripes on the sides and legs. Dr. Scott, who sent examples from the district of Harriana, near Hansi, states that it is very common, frequenting open sandy plains, where the Field-rat must be its chief food. He further says that he has seen them of half a dozen shades of colour, and the spots with a tendency to run into stripes, especially on the limbs. Jerdon says that he has procured it at Hissar, where it is common, at Mhow, not scarce, at Saugor, and rarely near Nagpore; but it does not seem to extend into the Gangetic valley, and to the south of the Nerbudda it is rare. At Hissar it frequents the low sandhills and bare fields, and appears to feed chiefly on the Gerbon Rat (Gerbillus indicus). This Cat is abroad during the entire day in open ground, and is not apparently very nocturnal in its habits. The animal called F. torquata by Sykes is, without much doubt, a hybrid, as he states it inhabits the grass roofs of houses, and thick hedges, and is constantly on the alert at night

-habits very different from those of the pure wild species. In his 'Catalogue of the Mammals in the East-India Company's Museum' Mr. Horsfield has placed this Cat under the name of F. torquata, Cuvier, given to a domestic or hybrid individual, and includes as synonyms entirely different species, such as F. bengalensis. Supposing that Mr. Horsfield had the true Desert-Cat, and not a hybrid, in his collection (I have not seen the specimen). Lawe placed his name also as a synonym of F. ornata. Blyth, in a footnote to his communication on the species of the genus Felix, published in the 'Proceedings of the Zoological Society' for 1863, states that Dr. Scott assured him of the occurrence at Hansi of hybrids with F. ornata, and that many of the domestic Cats of that part of India were undistinguishable from the wild F. ornata, just as some of those of the Scottish highlands are from the European wild Cat.

"Fur short, pale whitish brown, black-spotted. Spots small; on the middle of the back smaller, linear; on the front part of the sides larger, oblong; on the hinder part of the sides small, round; on the thighs and upper part of the legs confluent, forming interrupted cross bands. Tail reaching rather below the heel, pale at the lower half, with some interrupted black rings at the end, which is whiter than the rest of the tail, the tip black. Crown with lines of small

FELIS ORNATA.

spots; checks with two narrow dark lines; chin, threat, and spot over the orbits whitish; belly with black spots like those on the side. Body and head 19 inches, tail 8 inches."

The skull which Dr. Gray attributed to this species, and which is now in the British Museum, is marked F. huttoni, Blyth. It came from the Salt range, and was sent by Mr. Oldham. Length 3 inches 10 lines, width 2 inches 7 lines. Face rather short, broad; masals long, shender, and pointed at upper posterior ends. Premaxillas short and rather broad. Crown convex, shelving on the sides. Orbits incomplete. Brain-case full and rounded, with the squamosals prominent. Auditory bulle large, and the mastoid foramina obbong in shape. Superior ennines moderate in size.



FELIS ORNATA .

FELIS CHAUS.

THE CHAUS.

FELIS CHAUS, Gildenst. Nov. Comm. Petrop. vol. v. (1775) p. 485, t. 14, 187—8chrob. Singuth. (1789) Th. iii., p. 414—Gull. Spir. Nat. (1789) vol. i., p. 1, p. 52, p. 17.—bonn. Nover. Dott. Illist. Nat. (1816) p. 108—Gur. Gurns. Fos. (1819) vol. vir. p. 446 — F. Covr. & S.-H.II like, Nat. Imm. (1929) vol. ii., p. 113.—1292 col. d. (1819) p. 1, p. 142—Gur. Spir. Nat. Petrop. 170. Them. Mon. Manus. (1927) vol. ii. p. 112.—1292 col. d. (1819) p. 1, p. 142.—1292 col. vir. p. 191.—1292 col. vir. p. 191.—12

FELIS CATOLYNX, Pall. Zoog. Rosso-Asiat. (1811) vol. i. p. 23.

LYNX CHAUS, Fisch. Zoogn. (1814) p. 230. sp. 16.

FELIS AFFINIS, J. E. Gray, Illust, Ind. Zool. pl.

LYNCUS ERYTHROTIS, Hodg. Journ. Asiat. Soc. Beng. (1836) vol. v. p. 233.

FELIS INCONSPICUUS, Gray, Ann. Mag. Nat. Hist. (1837) p. 577.
CHAUS LIBYCUS, Gray, Cat. Mamm. Brit. Mus. (1842) p. 45.—Hd. Proc. Zool. Soc. (1867) p. 275.

FELIS JACQUEMONTI, I. Geoff. Voy. Jacq. t. 3. fig. 1 (skull); text, p. 58 (1847).

FELIS LIBYCUS, Loche, Expl. Scient. vol. iii. (1859).—Id. Cat. Mamm. Algér. (1858) p. 8. sp. 6.

FELIS (CATOLYNX) CHAUS, Severtz. Rev. Mag. Zool. (1858) p. 387.

CHAUS JACQUEMONTI, Gerr. Cat. Bones Brit. Mus. (1862) p. .-Gray, Proc. Zool. Soc. (1867) p. 275.-ld. Cat. Carn. Mamm. (1869) p. 34, sp. J.

PANTHERA INCONSPICUA, Fitzin. Sitzgsber. Akad. Wiss. Wien, (1868) lviii. p. 508.

PANTHERA JACQUEMONTI, Fitzin. Sitzgsber. Akad. Wiss. Wien, (1868) lviii. p. 517.

Khyoung tsek-koon, Arakan.

Hab. Egypt, the Caspian, Persia, India (Horsfield). India, North Burma, Arakan, South-West Asia, North-east Africa, South Africa (Blutth).

Turs Cat has a wide distribution, being found, as given above, from Southern Africa to North Burnas. It has also been the recipient of many names, as the list of synonyms shows; but it is now generally conceded among mammalogists that there is but one species, the examples from Asia and Africa being identical. Some specimens law to external marks on the limbs conspicuous, while in others they are very faint or entirely absent. This last is the F-jieoprosonist spite. These preclairative, however, are only such as a apperation to individuals, and cumnot in any way be regarded as indicating different species. In India, according to Jerdon, this is the common wild Cat, being meet with from the Himshaya to Gape Comorio, and from the seadered up to 8000 feet cleavation. It devels both in jumgles and in open country, and is found of staying in long grass, recels, correleids, &c. Occasionally it destroys poultry. It is said to breed twice a four the first consists of three or four young. These are perfectly untamable, no matter how young they may have been when expertend. Blyth relates that he possessed a couple of kittens of this species, taken when they could saveny greeted him with a splitful hiss. When smoothing their fir, they threw beat their loads as if frightened, and always greeted him with a splitful hiss. When smoothing their fir, they threw beat their loads as if frightened, and always greeted him with a splitful hiss. When smoothing their fir, they threw beat their loads as if frightened, and conver failed to resum their growthing and splitting the moment his hand was taken away. Lieut. Toked also found the Chaus to be utterly untamable. Once when shooting, Jerola brought down a penford at the edge of a sugar-cane.

FELIS CHAUS.

before the gaze of the astonished sportsman, and made good its escape. He thought it was probably stalking the bind, so immediately did its spring follow his shot. The same author says that he has seen numbers of Cats about the villages in various parts of the country that must have been hybrids between this species and tame Cats. A melanoid variety is not uncommon. McMasters, in his notes on Jerdon's 'Manumbs of India, 'remarks that the car-turb of this animal vary in length a good deal, either from ago, ex., or season. The species stands high on it legy, and is very powerful; and a full-grown individual will give a couple of greyhounds far more trouble to kill than a jackal would. He also states that the dark stripes on the limbs, externally as well as internally, are very conspicuous on some individuals, while in others they are hardly visible; and some have the fur gray, others of a red or rufous tinge. He shot one in Burnas that was standing in deep black much probably looking for cross. In sis species does not elimb trees; at least it is not known to do so. The author last named also tried to rear the young of this species, but without success; and he states that

For short, soft. General colour light grey or yellowish; underparts much lighter than the upper. No spots or lines distinctly visible on some individuals, though in others there are indications of rufous-brown lines passing round the body, while, again, some have conspicuous berowish black have not the inside and outside of the limbs. The tail is long and slender, and of the same colour as the body, with two or three brownish black bars or rings and a black tip. There are no lines across the checks, as is usual with members of this family; and individuals from various localities differ in colour and size; but it is undoubted that there is only one species of this form.

Length from nose to root of tail 251 inches, tail 10.

The skull of this species presents a rather long face, with broad nasals, which in some specimens narrow considerably towards their frontal articulation. The premaxilary processes are broad and short, extending but a little distance between the maxilia and nasals. Orbits incomplete, and the interorbital space wide. The brain-case is large and rounded, with the squamoosk prominent when the skull is viewed from above. Nasal aperture heart-shaped. Canines moderate in ealther. Infraorbital formen urgidityl oblong, and rather large in size. Antitory bulle large, rounded posteriorly. Mastoid foramen oblong in shape. Lower outline of inferior ranus curving gradually upward to the symphysis.



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FELIS CHAUS.

FELIS CAUDATA.

THE BOKHARA CHAUS.

CHAUS CAUDATUS, J. E. Gray, Proc. Zool. Soc. (1874) p. 31, pls. 6 & 7.—Id. Ann. & Mag. Nat. Hist. (1874) vol. xiii. p. 188. FELIS SERVALINA, Severtzov, Trans. Imp. Soc. Nat. Scien. Moscow, vol. viii. pt. 2 (1873).

HAB. Turkestan.

Turs species, which appears perfectly distinct from all those known in this family, was received by the British Museum packars, and described by O. Ging as shower circle. Whether it is the same as the E-secretain described by Severtzov (E-c) is difficult to determine; but in any case Dc. Gray's name stands, as that of E-seventian has already been employed for a very different species. Parent E-consists can once be recognized from E-class, with which it is nearest allied, by its long bashy ringed value all aposted body. De Gray's description is as follows:

"Fur close, soft, pale yellowish, blackish brown at the base, with very numerous small irregular spots. The spots are smallest and roundest on the dorsal line, oblong on the sides, and forming interrupted lines on the shoulders and trights, which are most distinct on the outsides of the fore legs, and especially forming four broad cross streaks on the front edge of the thighs. Tail cylindrical, reaching to the ground, spotted at the upper part of the base, and with eight or wine narrow interrupted rings on the upper part of the remaining portion, and with a black tip. Now hown, with short hair. Foreboad and decless like the base, but with smaller spots, and without any distinct dark streaks from the base dege of the eye. The case youte, ensure, pale hown externally, with a terminal pencal of blackshis hairs, and whitsin on the edge within. Chin, hinder parts of the upper lip, underpart of the head, throat, elsest, belly, inside of legs and hind feet whitish brown, the chin being whitest and the inside of final legs and feet chartest. There is a large blackshis spot on the upper part of the inside of the fore legs, and two small cross streaks on the front edge of the inside of the lind thighs. The hinder part of the inside of the fore legs, and two small cross streaks on the front edge of the inside of the lind thighs. The hinder part of the inside

The skull presents a short facial region, and when viewed in profile has the upper outline gradually and evenly arched. The ansals are rather brood, and have their processes on a line with those of the maxillas at the articulation with the frontals. Nasals and maxillas join for about half of their central length, the posterior and anterior portions being separated by the processes of the prefrontals and premaxillas. Orbits incomplete. Infraorbital foramina rounded and freely open. Interorbital space moderately wide. Benincase well developed and rounded, without any central righe. Auditory bulles moderately large. Lower outline of inferior names curving gradually upwards to the symphysis. Superior canines



Wolf & J Smit del et lith .

FELIS CAUDATUS

Manthadaul inv

FELIS SHAWIANA.

SHAW'S CAT.

FELIS SHAWIANA, W. Blanf, Journ. Asiat. Soc. Beng. (1876) vol. xiv. pt. 2, p. 49.—Id. Scient, Res. Second Yark. Miss., Mamm. (1879) Molas, Turki of Yarkand.

HAB. Yárkand, Eastern Turkestan.

This apparently new species of Felis was described by Mr. Blanford (l. e.) from specimens brought from Yarkand by Dr. Scully and Mr. Shaw. Previously Dr. Stoliczka had brought from Eastern Turkestan an imperfect skin, which Mr. Blauford hesitated to describe at the time, although believing it belonged to an unknown form. None of the specimens were perfect; but Mr. Shaw's only wanted the paws, and the entire skeleton was preserved. Its nearest ally seems to be F. caudata, Gray, but it differs from that species in having a shorter tail, and in being more spotted. It is stated to be common on the plains of Eastern Turkestan around Kashghar and Yarkand.

Mr. Blanford's description of this Cat is as follows:-

"General colour pale grevish fulvous above, the back rather darker than the sides, underparts white; the body marked throughout with rather small black spots, which are largest on the abdomen, smaller and closer together on the shoulders and thighs, tending to form cross lines on the latter, and indistinct on the middle of the back; anterior portion of the face and muzzle whitish, check-stripes of rusty red and black hairs mixed. Ears rather more rufous outside, especially towards the tip, which is blackish brown and pointed, the hairs at the end scarcely lengthened; interior of ears white. There are some faint rufous spots at the sides of the neck. Breast very faintly rufous with one narrow brownish band across. Inner side of limbs mostly white, a black band inside the forearm, and a very black spot behind the tarsus. Apparently there are two black bands inside the thigh; but the limbs are ill preserved in all the specimens. Tail dusky above near the base, with 5 or 6 black bars above on the posterior half, none below, the dark bars closed together toward the tip. Fur soft, moderately long, purplish grey toward the base.

"The size appears rather to excel that of a Domestic Cat, and to equal that of F. chaus. The tail apparently is about half the length of the body without the head. In the two best skins examined, the length from nose to rump is about 25 inches, the tail 7 to 8; but very little dependence can be placed on such measurements. The tail-vertebræ from the posterior end of the sacrum measure, when put together, 8.75 inches, which would coincide with a tail-

measurement outside the body of about 71 inches."

Of the skull, as compared with that of F. chaus, Mr. Blanford says it is "comparatively longer, has the nasal portion more elongate, the face less convex, the breadth behind the postorbital processes less, whilst the processes themselves are longer and project further." He gives the following measurements:-Total length of skull 4.25 inches. Length from incisors to lower edge of foramen magnum 3.67. Breadth across hinder parts of zygomatic arches 2.87. Breadth behind postorbital processes 1.23. Least breadth of face between orbits 0.8. Length of suture between nasal bones 1. Greatest diameter of bony orbit 1.25. Length of bony palate behind incisors 1.63. Length of mandible 2.88. Height of mandible from the angle to the top of the coronoid process 1.3.



FELIS CERVARIA.

THE SIBERIAN LYNX.

FELIS LYNX, Linn. Syst. Nat. (1766) vol. i. p. 62 (partim).

FELIS CERVARIA, Temm. Mon. Mamm. (1827) vol. i. p. 106.—Fisch. Syn. Mamm. (1829) p. 711. sp. 30.—Lees. Compl. Buff. (1839) and the first of Bulk Wireldshife. Bur. (1830) p. 62.—Lees. Nover. Thi. Riges, Ashin. (1812) p. 65. sp. 437—Hijth, Jonna. Ashin. Section. (1832) p. 63.—Lind. (1832

FELIS LYNX, var., Erxl. Syst. Reg. Anim. (1777) p. 528.

SIBERIAN LYNX, Griff, Anim. King. (1827) vol. ii. p. 494, pl.

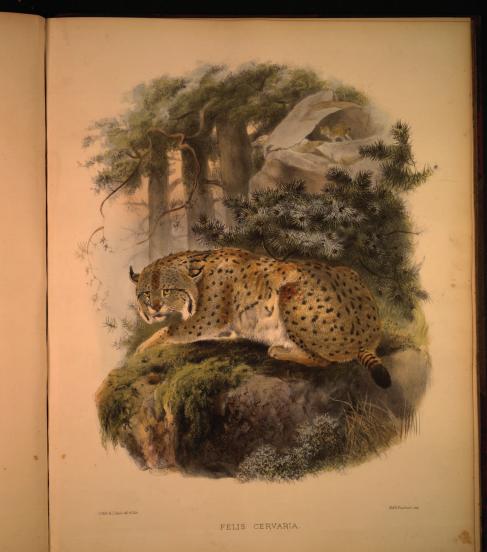
HAB. East of the Ural Mountains; rare in the Caucasus (BLYTH). Persia (MENETRIES). Rare in Skandinavia.

Trus is the largest species of Lynx known, and is apparently rather rare in collections. It has been confounded with the other northern species, the F. connotanis of this Monograph, but differs from it in many respects. According to Blyth, it is the Siberian Lynx of the furriers, and is chiefly brought to Moscow from Northern Asia. It is apparently are on the Causeaus, and probably extends northward along the forests of the Urul. In Scandinavia, where it is occasionally met with, it is called Kat-lo (Cat Lynx). Postropidan says that this Kat-goops is scarcely half the size of the Harn-goope or Red Lynx, when it is, in fact, much larger. In Persis this similar is known by the name of Vaurcheck, according to Minétriés. The conspicuous spots and bars, which cover nearly all the body, together with the rows lune of the fur, will at all times easily distinguish this species from the better-known Pelic connections.

General colour a rich roseate hus with a silvery tinge, the rose-colour becoming deeper or lighter in different lights. Back and sides, front of fore legs, flands, and limit legs to the laree, covered with large irrepaile hars and spot of blackish brown. Head rather lighter than the body, sometimes faintly and thickly spotted with rufous; but generally the head appears to be unspotted. Throat, inside of fore legs, belly, and front of the inside of hind legs white. Lower part of hind legs outside rudous, unspotted. This short, but longer in propertion than those of the generality of the species of this genus, rufous on top, white beneath, black for nearly two inches from the tip, and rather indistinctly harred above with a rufous brown. Centre of ears sirvery grey, edged around on the outer sides with blacksh brown, this fringed on the extreme outer edge with rich buff. Legs brownish black. Nails white. Whiskers rather small, with a conspicuous line of dark brown running through them, coming from behind the eye. Nose to root of tail 43 inches, and lin index.

The young are devoid of spots, excepting a few indistinct ones upon the inner upper portion of the outside of hind leg. The general colour is rufous, with indistinct lines running down the centre of the head and back. Three or four distinct black lines on upper lip. Threat, breast, belly and inside of legs white. Tip of ears and tail black.

The stall is long and narrow, with a moderately high forehead and rather lengthened face; when seen in profile, the upper centiles is regularly arched. The massian every broad, and extend beyond the processes of the maxillas, and are slightly pointed at their striculation with the frontal bone. Processes of prefrontals and premaxillas very long and narrow, and those of the maxillas are rounded at their upper posterior cruds. Orbits incomplete; interrobital space narrow. Infraorbiral formen large and round. Brain-case long and rather narrow, with a median crest extending along its whole length. Auditory bulks large, narrowing towards their asterior enach; the masteriol formen narrow and contracted. Lower outline of inferior ramus straight for its entire length. Canines large and strong, as are also the molars. Total length about 7 inches. Description from a specimen in British Museum, no. 1156 s.



FELIS CANADENSIS.

THE NORTHERN LYNX.

LYNX, Penn. Hist. Quad. (1793) p. 301. sp. 203.

- FELIS CANADENSIS, Desm. Nouv. Dict. Hist. Nat. (1816) p. 108.—Id. Mamm. (1820) p. 224. no. 346.—Hartl. Faun. Am. (1825) p. 28.— Griff, Anim. King. (1827) vol. v. p. 174.—Less. Man. Manun. (1827) p. 191. sp. 513.—Swain. & Rich. Faun. Ber-Amer. (1829) p. 191.—Fisch. Syn. Manun. (1829) p. 213. sp. 31.—Jard. Nat. Libr. vol. xvi. pl. 33.—Gapper, Zeol. Journ. (1835) vol. v. p. 293. p. 101.—e3sen, Syn. Mamm. (1829) p. 213. sp. 51.—ann. Cas. Lon. vol. 872 pl. 50. Capper, Sol. Journal, (1835) p. 92.—Murray, Geogr. Distr. Mamm. (1866) Less. Nouv. Tab. Règn. Anim. (1842) p. 57. sp. 548.—Gerv. Hist. Nat. Mamm. (1855) p. 92.—Murray, Geogr. Distr. Mamm. (1866)
- LE LYNX DU MISSISSIPPI, Buffon, Suppl. vol. vii. pl. liii.
- LYNX CANADENSIS, Raf. Am. Month. Mag. (1817) vol. ii. p. 46,—And. & Bach. Quad. N. Amer. (1849) vol. i. p. 136, pl. xvi.—Baird, U.S. Expl. Exped. (1857) vol. viii. p. 99.
- LE LYNX DU CANADA, Cuv. Ossem. Foss. (1825) vol. iv. p. 443.—Buff. Suppl. vol. iii. pl. xliv.
- FELIS BOREALIS, Tenun. Mon. Manum. (1827) vol. i. p. 169, App. p. 251.—Less. Man. Manum. (1827) p. 184. sp. 490.—Id. Compl. Buff. (1839) vol. i. p. 411.—Wagan. Supp. Schreb. (1841) vol. ii. p. 519.—Blyth, Journ. Asiat. Soc. Beng. (1842) vol. xi. pt. 2, p. (see
- LYNCUS CANADENSIS, Gray, Cat. Mamm. Brit. Mus. (1842) p. 46.—Severtz. Rev. Mag. Zool. (1858) p. 385.—Gray, Proc. Zool. Soc. (1867) p. 276.—Id. Cat. Carn. Mamm. (1869) p. 37. sp. 3.
- LYNCUS BOREALIS, De Kay, Nat. Hist. New York, (1842) p. 50, pl. x. fig. 2 (nec Thunb.).
- Han. Northern districts of both hemispheres, Scandinavia and similar latitudes of the eastern continent, spreading perhaps to the southward in Siberia, and along the forests of the Ural (BLYTH). Arctic regions of the New World, Canada, less common in the Northern States of the Union, and not going further south than Pennyslvania, but extending its range to California.

Thus species of Lynx is common to the districts of the extreme north of both hemispheres wherever the forests extend. It is remarkable for the thickness of its fur and the shagginess of its paws, recalling, as remarked by Blyth, the feet of some of the arctic birds, such as the Great Snowy Owi and Ptarmigan. There are no spots visible on any part of the body, although the last-mentioned author states that the long fur of the underparts has some black spots more or less brought out in different individuals. I take it this is exceptional, however; and the majority of specimens are spotless. In Scandinavia it is known as the Rislo or Raf-lo (Fox Lynx). In the New World it is the only species of Lynx, according to Richardson, which exists north of the great lakes. In those northern districts visited by this author, it was rare on the sea-coast, and was not found on the barren grounds, although not uncommon in the woody districts of the interior. Seven to nine thousand are annually procured by the Hudson's Bay Company. It was found on the Mackenzie River as far north as latitude 60°. It has an awkward, clumsy appearance on account of its thick legs and slender loins, and is a timid creature, and preys chiefly upon the Hares found in those solitudes. It proceeds by bounds, with its back slightly arched, and alights on all its feet at once. It swims well, and will cross the arm of a lake two miles in width. The natives cat its flesh, which is white and tender but without much flavour.

Felis canadensis is the largest species of Lynx found upon the North-American continent, and is restricted to its colder portions, not going farther south than Pennyslvania, where it is very rarely met with. It is shy and fond of seclusion, keeping continually in the thick woods and dense thickets, and seldom approaches the vicinity of man's habitation. Its dense cout of fur enables it easily to withstand the excessive cold of an arctic winter, and, in those high latitudes of both the Old and New Worlds, it maintains a precarious subsistence by catching hares, ptarmigan, young deer, &c. Like all its relatives, the present species is capable of ascending trees; and snugly enseonced in some convenient fork, it will frequently remain for hours, waiting a favourable opportunity to descend upon its unsuspecting prey. The Canada Lyux generally produces two young, though sometimes three are found in a litter. Besides the animals already mentioned. this Lynx preys upon squirrels and also on grouse and other birds, sometimes seizing the wild goose when sitting on

FELIS CANADENSIS.

its nest in the Arctic regions. Hearne, when at York Fort, mentions having eaten this creature, and found the flesh white and nearly as good as that of the rabbit. Many stories are current of this Lynx killing deer; but it is probable that only fawns fall a victim, and it is very doubtful if it would attack even them when protected by their dams. "Young fawns," say Audubon and Bachman, "as we have ourselves ascertained, are killed by these animals; and farmers in some of the wilder portions of our Northern States and of Canada complain of their carrying off their lambs and pigs. The Canada Lynx, however, is by no means so great a depredator in the vicinity of the farm-yard as the Wild Cat or Bay Lynx, as his more retired habits incline him to keep in the deepest recesses of the forests; and, besides, for aught we know, he may prefer 'game' to pigs and poultry." De Kay, in the Zoology of the 'Natural History of New York,' says it is the Loup-cervier of the early French writers, and the Big Grey Wild-cat and Wolverene of the New-York hunters. It is not uncommon in the northern districts of the State, preying chiefly on hares and other small quadrupeds, and occasionally devouring lambs, pigs, &c. It is a timid animal, and easily killed. Its progress is said to be a succession of leaps, alighting on all four feet at once, but not advancing with great rapidity. Hence it is probable it usually obtains its prey by surprise. Contrary to the usual habits of its family, it has no dread of water, but swims well and for a long distance. It breeds once a year, and has two young at a time. Its flesh is tender, but insipid. The fur is much esteemed; and a skin usually sells for from three to four dollars. It is strictly a northern animal, the geographical range being between 66° and 43° north latitude.

I have examined many skins of this species from both hemispheres, and I cannot perceive any difference; and no doubt the animals are identically the same. It was first described by Desameret in 1816 (l.c.) as F. conudensis, which is the name it must be known by I. Cannot agree with Nilsson that this is the animal described by Linnauss as F. Ignar; for means ampliasime, though certainly very applicable to the present species, may also be used for the winter coat of the European Red Lyra; whose paws at that season are thickly covered with fur, and consequently broad, while corporarforeente monutatio does not describe F. conucleus at my season of the year, but answerp perfectly well for F. Ignar.

For long, soft, fluffy. General colour light grey; base of the hairs ration, which gives a reddish tings to the coat; no systes or bands upon any part of the animal. Upper part of head and back darkest. Ears behind light grey in the middle; top and outer edges black. Turns of upright black hairs project from the point of the cars, and are completous ornaments. Whisters long, white, with black on the edges. Underparts white. The far upon the legs and feet very dense, sometimes extending onto the soles of the feet. Tail very short, some colours are body, and tripped with black.

Nose to root of tail 30 inches, tail 6 inches.

The shell when viewed in profile has the upper cultime considerably arched. The facial region is short, and below the line of the forbeals. Neads very broad, narrowing to their articulation with the frontal bone. Processes of performal and premaxilla very long and narrow, sentjue good and anote entirely separating the massis from the maxillas. Orbits incomplete. Infraorbital forminia round and large framework developed and rounded, without central ridge. Auditory bulke nearly oblong, without central ridge. Auditory bulke nearly oblong, without reaction each. Mastoid frommis small and ramms straight for its entire length from angle to symphysis. Canino long and strong, and the modula regions arched well orderedoped.



I Wolf & J.Smrt. del. et lith.

M&NHanhart smy

FELIS CANADENSIS.

FELIS PARDINA.

THE SPANISH LYNX.

FELIS PARDINA, Tenm. Mon. Mann. (1827) vol. i. p. 116.—Less, Man. Mann. (1827) p. 183. sp. 487.—Fach, Syn. Mann. (1829) p. 216.—187.
yr. 28.—Less. Compl. Baff. (1839) vol. i. p. 411.—Keyert. & Blas. Wielchili. Eur. (1840) p. 62.—Lex. Neur. Tab. Bigar. Min. (1841) p. 54. p. 445.—Blyb., Journal, Antis. Sco. Beng. (1942) vol. i. pi. ii. p. 747.—Gerr. Hint. N. Mann. (1845) p. 30.—Gerris. (1846) p. 54.—Marray, Goog. Distr. Mann. (1866) p. 101.—Tristr. Proc. Zool. Soc. (1866) p. 92. sp. 64.—Danf. & Abson. Proc. Zool. Soc. (1876) p. 27.

LYNCUS PARDINUS, Gray, Cat. Mamm. Brit. Mus. (1842) p. 46.—Id. Proc. Zool. Soc. (1867) p. 276.—Id. Cat. Carn. Mamm. (1869) p. 38. sp. 4. PELIS CERVARIA, H. Saunders, Proc. Zool. Soc. (1869) p. 432 (over Temm.).

HAB. Southern Europe: Portugal; Spain; Sardinia? Sicily; Turkey. Asia Minor (DANFORD).

This species is rare in Asia Minor; but Mr. Danford procured one skin and saw another very fine one at Kaisariyeh. Ainsworth records that eight individuals were seen by his party in one day on Tehskúrovah, near Missisáh.

The Spanish Lyax, as this species is usually called, is an inhabitant of the warmer portions of the European continent, and is confined to the southern countries lying along the Mediterranean. It is smallferithan the Red Lyax, and is remarkable for the beauty of its matchigs and the length of the whiskers that mag down on each side of the threat below the chin. In Spain, where this animal appears to be not uncommon, it is called "Gato clave;" and, as stated by Sykes, the peasunts of Andalusia make jackets out of the skim. It has two styles of fur in the year, that wom in the summer being the same as that figured in my Plate, while the winter, pelage is a dark grey covered with small black spots.

The general colour of this animal is a bright rufous; the body exceed rather thickly with small blackish bown spots, which extend the entire length of the fore legs to the fost, but on the lind legs only to the knee. The underparts are dark buff or yellowish white, with a five infinition spots on the issile of the belly. Lower part of checks, threat, breast, and hind part of fore legs white; the last having one or two banks and some spots of blackish brown near-the shoulder. The head has several narrow blackish flowom into integral spots and bars upon the back. Two dark brown from the eyes across like checks. Whitever states long-lackish brown for the greater part, the portion alongside the throat white. Inside of hind legs dark buff, who or two broken hars of blackish brown are the body. Centre of star rufous, base and flup black. Tail very short cupier just rich red, crossed by several (five or six broken hars of blackish brown; underpart white. Tigs of ears black, Some-specimens are dark gag in colour, thickly covered with small black spots, these being distributed on the body as in the rufous examples. Throat and middle of belly white. Centre of ears being distributed on the body as in the rufous examples. Throat and middle of belly white. Centre of ears being distributed on the body as in the state of the

The skull of this species presents a very high forchead, with a comparatively langthered facial region. When viewed in profile, the upper outline is greatly arched, the forchead being the lighest point, from which it dopes rapidly posteriorly and nateriorly, the descent being most marked in the latter direction. The massia are very broad, and extend beyond the processes of the maxille at their articulation with the prefound. A median depression on the massle for their cutries length, being deepest at their posterior ends. Neasl aperture heart-shaped. Processes of performats and premacillas very long and narrow. Orbits large, incomplete. Infrarbital forminin large and round. Interest the special posterior profiles and premacillas very Brain-case rounded and well developed, with a short postocipial creer. Antitory buller lorg: and oblong. Mastoid formine flattened on one side, rather large and open. Lower outline of manifest profiles profiles and oblong. Mastoid profiles and the profiles of th





FELIS LYNX.

THE EUROPEAN RED LYNX.

FELIS LYNX, Linn. Syst. Nat. (1766) vol. i. p. 62. sp. 7 (partim).—Erxl. Syst. Règn. Anim. (1777) p. 525. sp. 15.—Schreb. Säugeth. (1778) Th. iii. p. 408. t. cix.—Gmel. Syst. Nat. (1788) vol. i. pt. i. p. 81. sp. 7.—Desm. Nouv. Dict. Hist. Nat. (1816) p. 106.—Id. Mamm. (1820) p. 224. no. 345, pl. 97. fig. 3.—Cuv. Ossem. Foss. (1825) vol. iv. p. 441.—Temm. Mon. Mamm. (1827) vol. i. p. 111.—Less. Man. Mamm. (1827) p. 183. sp. 486.—Fisch. Syn. Mamm. (1829) p. 210. sp. 29.—Pall. Zoog. Rosso-Asiat. (1831) vol. i. p. 28.—Jard. Nat. Libr vol. xvi. p. 262. pl. xxxiv.—Less. Compl. Buff. (1839) vol. i. p. 411.—Blainv. Ostéol. (1839–64) vol. ii. Atl. pls. iii., xiv.—Keyserl. & Blas. Wirbelth. Europ. (1840) p. 62.—Less. Nouv. Tab. Règn. Anim. (1842) p. 56. sp. 546.—Blyth, Journ. Asiat. Soc. Beng. (1842) vol. xi. pt. ii. p. 745.—Nils. Skand. Faun. Mamm. (1846) pp. 122, 126.—Gerv. Hist. Nat. Mamm. (1855) p. 93.—Keyserl. & Blas. Naturg. Säugeth. Deutsch. (1857) p. 172.—Clerm. Quad. Eur. (1859) p. 70.—Giebel, Landw. Zool. (1869) p. 44.—Lilljeb. Sver. Norg. Ryggrad. (1874) p. 478.—Danf. & Alst. Proc. Zool. Soc. (1877) p. 273.

FELIS LUPULINA, Thunb. Denkschr. Münch. t. ix. p. 187.—Less. Compl. Buff. (1839) p. 411.—Gray, Proc. Zool. Soc. (1867) p. 276. sp. 2.—

Id. Cat. Carn. Mamm. (1869) p. 57. sp. 2.

FELIS VULPINUS, Thunb. Denkschr. Münch. t ix. p. 189.—Less. Compl. Buff. (1839) vol. i. p. 411.

FELIS BOREALIS, Keyserl. & Blas. Wirbelth. Europ. (1840) p. 63.

FELIS VIRGATA, Nilss. Illum. Fig. till Skan. Faun. pls. 3, 4.—Id. Skan. Faun. (1846) p. 126, Mamm.—Lillej. Sverig. Norg. Ryggrad. (1874)

LYNCUS VULGARIS, J. E. Gray, Cat. Hodg. Coll. Mamm. Birds Nepal & Thibet (1846) p. 7.

FELIS ISABELLINA, Blyth, Journ. Asiat. Soc. Beng. (1847) vol. xvi. pt. ii. p. 1178.—Id. Proc. Zool. Soc. (1863) p. 186. sp. 21.—Blanf. Proc. Zool. Soc. (1876) p. 633.

LYNCHUS LYNX, Severtz. Rev. Mag. Zool. (1858) p. 385.

FELIS BOREALIS, Clerm. Quad. Eur. (1859) p. 69.—Murray, Geogr. Distr. Mamm. (1866) p. 101.

LYNCUS ISABELLINUS, J. E. Gray, Proc. Zool. Soc. (1867) p. 276.—Id. Cat. Carn. Mamm. (1869) p. 38. sp. 5.

LYNCHUS BOREALIS, Gray, Proc. Zool. Soc. (1867) p. 276.—Id. Cat. Carn. Mamm. (1869) p. 37. sp. 1.

FELIS FAGESII, A. Milne-Edw. MS.

Hab. Norway and Sweden; wilder parts of Germany, Poland, and Hungary; rare in Switzerland and in France; more numerous in Russia, and common in the Caucasus. In Italy, Temminck states, it is found as far south as Naples. Asia Minor? (Danford). Thibetan plateau (Blanford). Thibet (Blyth).

MR. Danford obtained a fine skin of this animal in Constantinople, which was said to have come from Asia Minor. It was of a nearly uniform light rufous, with obscure spots on the flanks; the markings on the limbs were hardly darker than the colour of the back; and the terminal third of the tail was black. It agrees with Blyth's description of *F. isabellina*, from Thibet; but it does not appear to be any more than a variety of *F. lynx*.

This is the common lynx of Scandinavia and Western Europe. It is called "Warglo" in Sweden, and "Warg-goupe" in Norway. In those northern countries it is found in considerable abundance in the wooded districts; for, like most of this group of Cats, the present species is a forest-loving animal, and usually remains in their wildest portions, seldom venturing into the vicinity of habitations. It is a solitary creature, seeming to prefer living alone, although occasionally a pair is met with. Major Lloyd states that the period of gestation of this animal is from eight to nine weeks; and the kittens are born about the beginning of May, either in the cavity of a rock or some sheltered situation. The mother is said to give her whelps living animals, in order to teach them how to kill their prey. The Red Lynx is very destructive, and slays the young of species of deer, and preys also upon hares, grouse, &c. Sheep, goats, and calves are also killed by him; and it is said that, if unmolested, whenever he gets among a flock of sheep, he will slaughter them all. He is not known to feed upon carrion, although I imagine it depends a great deal upon the state of his appetite at the time whether or not he will touch it. This species will not attack man, unless it is wounded or escape rendered impossible, and when closely pursued ascends a tree with great agility. When unable to obtain the shelter of a tree or rock, it is said to defend itself against a dog or other pursuer by lying on its back, and fighting desperately with its claws. In the daytime, according

FELIS LYNX.

to Pontoppidan, these Lynxes remain hidden in their burrows, going out at night and lying in wait for their prey. They are very choice in their food, and only eat the head or udder of a sheep or goat. The Wild Cat is said to watch them and steal their food from their burrows. He relates that on a certain occasion, as a Lynx was making his way into a sheep-fold, he was was discovered by an old he-goat, who, perceiving his subterraneous entrance, watched for him and, as he was coming forth dragging a sheep with him, butted him with such force and good will as to lay him dead.

The Thibetan form of this species was described by Blyth (l. c.) as Felis isabellina, the distinction which he chiefly regarded as specific being the much larger naked pads of the feet and toes, as compared with those of the European Red Lynx. I cannot but consider this character, if it really is one, altogether too superficial to warrant the belief that the Thibetan animal should be separated from the European. The amount of fur existing upon the soles of the feet naturally varies among individuals, and also at different seasons of the year, although Blyth states the Thibetan Lynx has this more scanty at all seasons. I do not, however, think this slight difference is at all sufficient to constitute its possessors a distinct species. As to the colouring of the fur, this, as stated by Blyth, varies much according to the season. In one specimen in his possession, which was in full summer dress, the pelage was short and of a uniform dull sandy-brown colour, deeper and more rufous along the back, and grizzled with whitish-tipped and also some blacktipped hairs, which on the sides were diffused more scantily. The lower parts were white, with some scattered dusky spots, and some not very conspicuous markings of a deeper hue on the outer side of the limbs; face and whiskers as in the Red Lynx. Another specimen was paler, a light isabelline hue predominating; in certain lights the markings of the summer dress of the European Lynx could be discerned upon the sides of the croup; and the spots on the legs and sides were comparatively distinct, the blackish bars on the inside of the fore limbs being well developed. The winter dress is of a nearly uniform fine rufous cream-colour, the hairs whitish-tipped, with black at the extreme tips, producing a grizzled appearance, the isabelline hue beneath being less deep than in the European Lynx; sides paler and longer-haired, as usual, and the colour purer, passing to white underneath mixed with black hairs that grow on the spots.

A specimen of this species (as I consider it) in the Paris Museum, from Thibet, and which would be the same as the F. isabellina of Blyth, bears the MS. name of F. fagesii, A. Milne-Edwards. The hair is of a lighter hue than the summer coat of F. lynx, and perhaps slightly longer, but not more so than would be expected from the northern habitat of the animal. The specimen is grey, inclining to rufous upon the back, shoulders, and hind quarters, the underparts being white. The legs are covered on the outside with small brownish black spots; and the inside of the fore legs has three indistinct bars of the same colour. The ears are edged with black on their hinder surface, and possess long black hairy tips. The tail is reddish for the basal two thirds of its length, the rest black. This example does not, in my opinion, represent a species distinct from F lynx; and I have therefore placed the MS. name among the synonyms given above.

A British-Museum specimen, marked *F. isabellina*, also from Thibet, resembles the one described above, except that the spots on the legs are very indistinct, almost obsolete, and the tail is grey for its basal half, not reddish, the rest black. General colour of the specimen very light grey; belly white; whiskers and ears tipped with black.

From Blyth's descriptions and the specimens I have examined from Thibet, we may conclude that the animals from that country are the same as Felis lynx, but lighter in the general colour of their pelage.

General colour light red, inclining to brown upon the head; flanks, loins, and legs thickly covered with small spots of very dark brown. Cheeks, throat, belly, and inside of legs pure white. Tail red like the back, black for about $2\frac{1}{2}$ inches from the tip. Upper and under lips crossed with three or more conspicuous black lines. Whiskers small. Ears behind light grey in the centre, edged and tipped with black. Nose to root of tail 31 inches, tail $9\frac{3}{4}$ inches.

The skull, viewed in profile, shows a very greatly arched upper outline, caused by the high forehead, and in this respect resembles that of *F. pardina*. The nasals are broad, and at their frontal articulation extend beyond the processes of the maxillas. As in all Lynxes, the processes of the prefrontals and premaxillas are very long and slender, almost completely separating the maxillas from the nasals. The orbits are incomplete; and the infraorbital foramina are large and oblong in shape. Brain-case long and prominently rounded posteriorly. There is a slight postoccipital crest. Auditory bullæ large, oblong, narrowing anteriorly. Mastoid foramen oblong, well open. Lower outline of mandibular ramus nearly straight from symphysis to angle. Canines long and stout; molars well developed. Description from specimen in British Museum, from Sweden, No. 1230 b. It differs externally from the skull of *F. cervaria* in the Museum in its higher forehead, shorter and rather broader form, and absence of median crest on the postfrontals.



FELIS RUFA.

THE BAY LYNX, AMERICAN WILD CAT.

BAY CAT, Penn. Syn. (1771) p. 188, pl. xix. fig. 1.—Id. Hist. Quad. (1781) no. 171.—Id. Arct. Zool. (1784) vol. i. p. 51.

FELIS RUFA, Güldenst. Nov. Comm. Petr. xx. p. 499 (1776).—Schreb. Säugeth. (1778) Th. iii. p. 412, t. cix. B.—Gmel. Syst. Nat. (1816) p. 107. —Desm. Nouv. Dict. Hist. Nat. (1816) p. 107.—Id. Mamm. (1820) p. 225. no. 347.—Temm. Mon. Mamm. (1827) vol. i. p. 141. Less. Man. Mamm. (1827) p. 192. sp. 514.—F. Cuv. Hist. Nat. Mamm. (1828) vol. ii. pl. 141.—Fisch. Syn. Mamm. (1829) p. 212. sp. 32.— Blainv. Ostéog. (1839-64) vol. ii. pl. 141.—Güldenst. Voy. de la Venus, t. 9. figs. 2-4 (skull).—Less. Compl. Buff. (1839) vol. i. p. 411. Id. Nouv. Tab. Règn. Anim. (1842) p. 57. sp. 549.—Blyth, Jour. Asiat. Soc. Beng. (1842) vol. xi. pt. ii. p. 752.—Geoff. St.-Hil. Voy. Venus, Zool. (1855) vol. i. p. 150. pl. ix.—Gerv. Hist. Nat. Mamm. (1855) p. 91.—Alston, Biol. Centr. Amer. (1880) p. 64.

MOUNTAIN CAT, Penn. Hist. Quad. (1781) no. 168.—Id. Arct. Zool. (1784) vol. i. p. 51.

BAY LYNX, Penn. Hist. Quad. (1793) p. 303. sp. 204, pl.

TIGER CAT, Lewis & Clark, Travels, (1814) vol. ii. p. 167.

LYNX FLORIDANUS, Raff. Amer. Month. Mag. (1817) vol. ii. p. 46.

LYNX MONTANUS, Raff. Amer. Month. Mag. (1817) vol. ii. p. 46.

LYNX RUFUS, Raff. Amer. Month. Mag. (1817) vol. ii. p. 46.—Aud. Bach. Quad. N. Amer. (1849) vol. i. pl. i. 8vo. ed.—Bart. Am. N

LYNX AUREUS, Raff. Amer. Month. Mag. (1817) vol. ii. p. 46.—Less. Compl. Buff. (1839) vol. i. p. 412.

LYNX FASCIATUS, Raff. Amer. Month. Mag. (1817) vol. ii. p. 46.—Desm. Mamm. (1820) vol. i. p. 225.—Baird, U.S. P. R.R. Expl. Exped. (1857) vol. viii. p. 96.

FELIS MONTANA, Desm. Mamm. (1820) p. 225. no. 349, pl. 98. fig. 2.—Harl. Faun. Amer. (1825) p. 101.—Less. Man. Mamm. (1827) p. 194. sp. 522.—Id. Compl. Buff. (1839) vol. i. p. 411.—Leconte, Proc. Acad. Nat. Scien. Phil. (1854) p. 9.—Gerv. Hist. Nat. Mamm. (1855)

FELIS FLORIDANA, Desm. Mamm. (1820) p. 225. sp. 350.—Less. Man. Mamm. (1827) p. 194. sp. 524.—Id. Compl. Buff. (1839) vol. i. p. 412.

FELIS AUREA, Desm. Mamm. (1820) p. 225.—Less. Man. Mamm. (1827) p. 194. sp. 524.—Id. Nouv. Tab. Règn. Anim. (1842) p. 57. sp. 551. FELIS CAROLINENSIS, Desm. Mamm. (1820) p. 234. note 1.—Less. Man. Mamm. (1827) p. 195. sp. 527.—Id. Compl. Buff. (1839) vol. i. p. 411.

FELIS FASCIATA, Buff. Suppl. vol. iii. pl. 44.—Harl. Faun. Amer. (1825) p. 100.—Cuv. Ossem. Foss. vol. vi. p. 441.—Less. Man. Mamm. (1827)

p. 193. sp. 521.—Swain. & Rich. Faun. Bor.-Amer. (1829) Mamm. p. 104.—Fisch. Syn. Mamm. (1829) p. 212.—Less. Compl. Buff. (1839) vol. i. p. 411.—Id. Nouv. Tab. Règn. Anim. (1842) p. 57. sp. 550.

CHAT À VENTRE TACHETÉ, F. Cuv. Hist. Mamm. (1826) vol. ii. pl. 140.—Temm. Mon. Mamm. (1827) vol. i. Append. p. 258.

FELIS MACULATA, Vig. & Horsf. Zool. Journ. (1829) vol. iv. p. 381, pl. xiii.—Less. Compl. Buff. (1839) vol. i. p. 411.—Id. Nouv. Tab. Regn. Anim. (1842) p. 58. sp. 553.

LYNX RUFUS; var. MACULATUS, Aud. & Bach. Quad. N. Amer. (1842) 8vo ed. vol. ii. p. 293, pl. xcii.—Baird, U.S. P. R.R. Expl. Exp. (1857) vol. viii. p. 93.—Id. U.S. & Mex. Bound. Surv. (1859) p. 13.—Allen, Bull. U.S. Geol. Surv. vol. ii. p. 322.

LYNCHUS RUFUS, Severtz. Rev. Mag. Zool. (1858) p. 386.

LYNCUS RUFUS, DeKay, Nat. Hist. N. York (1842) p. 51.—Gray, Proc. Zool. Soc. (1867) p. 279.—Id. Cat. Carn. Mamm. (1869) p. 38. sp. 7.

LYNCUS FASCIATUS, Gray, Proc. Zool. Soc. (1867) p. 276.—Id. Cat. Carn. Mamm. (1869) p. 38.

LYNX MACULATUS, Murray, Geog. Distr. Mamm. (1864) p. 101.

LYNCUS MACULATUS, Gray, Proc. Zool. Soc. (1867) p. 297.—Id. Cat. Carn. Mamm. (1869) p. 38. sp. 8. Short-tailed Cat of the Texans; Gato montes of the Mexicans; No-mé of the Yuma Indians; Chimbi, Cochinnes of Lower Calfornia (Schott).

HAB. North America generally

THE Bay Lynx is generally distributed throughout the United States, especially in the forests of the Alleghanies and other mountain-ranges, extending southwards into Florida and Mexico. It is also found in California and about the Columbia river. Although it has borne many names, yet I can see no reason for believing that there is more than one species, individuals from various districts varying from the typical style to a greater or less degree, but not more so than is generally the case among the changeable members of this family. The Florida form, separated by some authors as

F. floridana, is usually of a greyish hue without a rufous tinge, with black lines on the back and head, and with dark spots. Those from Texas and Arizona (F. maculata) are light reddish-brown mixed with greyish, with distinct spots on back and sides. All the specimens from this region, however, are not alike, some being chestnut-brown above, thickly marked with dark spots, while others, again, are rusty-grey, with but faint spots. The north-western examples from Oregon and Washington Territory (F. fasciata) are of a dark foxy colour, this hue extending far on the belly, which is tinged with yellowish instead of being pure white. This last style is very handsome, and distinguishable by its rich colouring. If the above-mentioned styles were uniform and each restricted to a certain locality, they might with some reason be regarded as species; but they vary among themselves, and are evidently but members of the same species presenting the results of a climatic influence incident to their different geographical distribution.

The Wild Cat frequents the sides of wooded hills, the thickets of the south, swamps and such like retired situations. It is very shy and wild, and is rarely seen away from some secure retreat, into which it can disappear at once from the approach of an enemy. It preys on the fawns of the Virginian deer, young pigs, hares, mice, poultry, ducks, partridges, and other small animals, and, should it take up its abode near a poultry-yard, fails not to make great havor among the inmates. It does not seem to fear water, and often seeks the streams in quest of any fish or frog that may be upon the banks. This Lynx can ascend trees, and frequently does so when hard pressed by dogs, and, if forced to leave its post among the branches, fights desperately until killed. It possesses a good deal of cunning, and resorts to various devices to throw its pursuers off the track—and when started, generally makes for some thicket, where it doubles frequently and crosses its tracks many times to put the hounds at fault. It is not a very active swimmer, but is not averse to taking the water. Audubon and Bachman state that this species produces from two to four young, sometimes under an old log covered with vines, or else in a hollow tree, occasionally in an opening twenty feet high, at other times in a cavity at the root. In the Sierras of Pimoria Alta (Sonora) this Lynx seems to be quite common; and Mr. Schott says that traces and specimens of it were found on the lower Rio Bravo. Two examples were procured in the Sonorian mountains near Fort Yuma, and one near Laredo on the lower Rio Bravo. The latter was hunted with dogs, and made the valley resound with its fighting call, which was loud and abrupt, and furiously thrown forth, resembling on a small scale the roar of the Puma under similar circumstances. According to De Kay, the Wild Cat was very common in the Colony of New York at its first settlement, and one hundred and thirty years ago they were so numerous in Suffolk County that the Legislature passed an act for their destruction.

General colour yellowish brown, spotted on the sides with dark brown. Forehead striped with dark brown, and a line of the same colour in the centre of the back running from the shoulder to the tail. Under surface yellowish-white, spotted with black. Tail above like the back, with several narrow transverse brown bars and tipped with black. Legs yellowish brown spotted with black on the outside, the inner surface dull white with two broad and some narrow bars of black. Two black bars across the cheeks—one from the corner of the eye, and one beneath it. Whiskers white with black centres. Chin and throat whitish. Breast white crossed by several black bars Hind part of ears black with a central grey spot, inner surface yellowish white.

Total length from nose to root of tail about 30 inches, tail 5 inches.

The summer pelage is of a more reddish tint than that of the winter.

Specimens vary greatly, as has already been stated, some being very indistinctly spotted, while others are covered with large blotches with pale centres.

Two of the styles are represented in the Plate.

The skull is rather short and broad, with the upper outline, when seen in profile, much arched. The processes of the premaxillas are long and slender, and extend a considerable distance up the sides of the nasals, separating them from the maxillas, and leaving but a small space between their ends and those of the prefrontals. The orbits are incomplete, and the interorbital space rather wide. The forehead is slightly concave; and a depression between the nasals produces a rather deep groove at the symphysis. Brain-case broad and evenly rounded. Infraorbital foramena large, freely open, and slightly flattened on the inner side. Upper canines moderately long and rather stout. Lower outline of mandibular ramus nearly straight for its entire length.



FELIS CARACAL.

THE CARACAL.

FELIS CARACAL, Güldenst. Nov. Comm. Acad. Petrop. vol. xx. (1776) p. 500.—Erxl. Syst. Regn. Anim. (1777) p. 524. sp. 14.—Schreb. Säugeth. (1778) Th. iii. p. 413, tab. cx.—Thunb. Act. Petropol. vol. iii. (1782).—Gmel. Syst. Nat. (1788) vol. i. pt. 1, p. 82. sp. 18.— Desm. Nouv. Dict. Hist. Nat. (1816) p. 105.—Id. Mamm. (1820) p. 226. no. 352, pl. 97. fig. 2, and var. A, B, C.—F. Cuv. Hist. Nat. Mamm. (1822) vol. ii. pl. 130.—Cuv. Ossem. Foss. (1825) vol. iv. p. 439.—Griff. Anim. King. (1825) vol. iv. p. 439.—Jard. Nat. Libr. vol. xvi. p. 251, pl. xxx.—Temm. Mon. Mamm. (1827) vol. i. p. 118.—Less. Man. Mamm. (1827) pp. 181, 491.—Fisch. Syn. Mamm. (1829) p. 210. sp. 27.—Smuts, Dissert. Zool. (1832) p. 29.—Less. Compl. Buff. (1839) vol. i. p. 411.—Blainv. Ostéog. (1839—64) vol. ii. Atl. pls. x., xi., xii., xiii., xiv.—Less. Nouv. Tab. Règn. Anim. (1842) p. 55. sp. 542.—Blyth, Journ. Asiat. Soc. Beng. vol. xi. (1842) p. 759.—Loche, Expl. Scien. Algér. (1850) pl. 2.—Gerv. Hist. Nat. Mamm. (1855) p. 92.—Loche, Cat. Mamm. Algér. (1858) p. 8. sp. 15.—Sclat. Wolf's Zool. Sketch. (1861) pl.—Blyth, Proc. Zool. Soc. (1863) p. 186. sp. 20.—Tristr. Proc. Zool. Soc. (1866) p. 92. sp. 65.—Jerd. Mamm. Ind. (1867) p. 113. sp. 116.—Danf. & Alst. Proc. Zool. Soc. (1877) p. 273.

PERSIAN LYNX, Penn. Hist. Quad. (1793) p. 305. sp. 207, pl.

LYNX CARACAL, Fisch. Zoogn. (1814) p. 250. sp. 15.

CARACAL MELANOTIS, J. E. Gray, Cat. Mamm. Brit. Mus. (1842) p. 46.—Id. Proc. Zool. Soc. (1867) p. 277.—Id. Cat. Carn. Mamm. (1869) p. 38.

LYNCHUS (UROLYNCHUS) CARACAL, Severtz. Rev. Mag. Zool. (1858) p. 389.

Hab. South Asia and Africa. Central India (ВLYTH). Asia Minor, neighbourhood of Smyrna. Common in the Taurus (Danford).

The Caracal is conspicuous, even among the Lynxine group of this family, for the greatly elongated tufts that ornament the tips of its ears. It is found in West and Central Asia, being known as Tsogde in Little Thibet and Ech in Ladakh. It is a native of Persia, where it is called Karrah-kulak and Siyah Gosh, and is also met with in many parts of India, being, perhaps, more abundant in the west (in Kandeish, Gujrat, and Cutch, according to Jerdon). It does not seem to dwell in the Himalayas or in Bengal; but the author named above says he was assured that this Lynx occurs in the North-west Provinces and the Punjab, and also that it has been killed near Delhi, Lahore, and other places. The Caracal is also a native of the whole of Africa from Barbary to the Cape of Good Hope. Temminck states that this species is accustomed to hunt in packs, pursuing and attacking game like wild Dogs. In certain districts of India some of the native princes are said to keep packs of these animals trained to hunt Peafowl and Hares, &c.; and Captain Congsmaker has favoured me with the following information regarding this species:—

"The Lynx (Felis caracal)—Siyah Gosh (black-ear) in Persian—is used by the Arabs and Persians for hunting small Antelopes, Peafowl, and the Demoiselle Crane, the Kulung (Culm) of India. Large flocks of these are found in the cold weather when the wheat, large millet, and the various oil-seeds are ripe. The Lynx is taken near them in a cart with a hood over its eyes; and when this is taken off, it, with a few quick bounds, rushes at the Cranes, often springing up and pulling them down as they rise from the ground. When it pulls its prey down it throws its whole body over the bird, so as to keep its wings quiet, while it tears the neck with its teeth." The practice of carrying the animal near its prey in a cart, it will be observed, is the same as that employed when hunting the Antelope with the Cheetah. It is hardly necessary to add that the Caracal becomes easily domesticated, being the only member of the Lynxine group that is susceptible of being tamed. Like all Cats, this species varies greatly in the hue of its coat, some specimens being quite reddish, others dark brown; but this is nothing but an individual variation, and must not be regarded as indicating any specific difference. In my Plate the dark and light styles are both represented.

General colour light red, free from spots or markings, throat and underparts generally white; back and tip of ears black, as is also a spot on each side of the upper lip. Individuals of this species from different localities vary greatly, some being very dark. The tail, which is moderately long, is red like the body. Nose to roof of tail 34 inches, tail 13.

The young resemble the adults.

The skull of the Caracal has a short face, with a high forehead, and thence backwards curves gradually downwards to the occiput. Interorbital space wide. Nasals broad, depressed medianly, forming a rather deep groove. Processes of premaxillas extend upwards between nasals and maxillas and leave but a small space between their ends and those of the frontals. The fronto-nasal articulation is on a line vertically with that of the processes of the maxillas. The brain-case is swollen and oblong in shape. Orbits incomplete. Upper canines rather stout, but not long. A low postoccipital crest is visible in most specimens.



FELIS DOMESTICA.

DOMESTIC CAT

FELIS DOMESTICA, Gmel. Syst. Nat. (1788) vol. i. p. 80, sp. 6, var. B.—Fisch. Syn. Mamm. (1829) p. 207, sp. 25.—Rengg. Zool. Journ. (1835) vol. v. p. 470.—Bell, Hist. Brit. Quad. (1837) p. 182.—Less. Compl. Buff. (1839) vol. i. p. 410.—Blas. Wirbelth. Eur. (1840) p. 167, fig. 104 (skull).—Keyserl. & Blas. Wirbelth. Europ. (1840) p. 61.—Nils. Skand. Faun. (1847) p. 110.—Keyserl. & Blas. Naturg. Säugeth. Deutsch. (1857) p. 167.—Gray, Cat. Hodg. Coll. Mamm. Brit. Mus. (1863) p. 4. sp. 34.—Gray, Proc. Zool. Soc. (1867) p. 274.—Brown, Proc. Zool. Soc. (1868) pp. 339, 340, 349.—Rollest. Journ. Anat. & Physiol. (1868) p. 47.—Gray, Cat. Carn. Mamm. (1869) p. 32, sp. 31.—Giebel, Landw. Zool. (1869) p. 39.—Lenorm. Compt. Rend. (1870) lxxi. pp. 738, 743.

FELIS CATUS, var. β, DOMESTICUS, Erxl. Syst. Gen. Anim. (1777) p. 520.

FELIS CATUS, var. γ, ANGORENSIS, id. ibid. p. 521.

FELIS CATUS, var. δ, HISPANICUS, id. ibid. p. 522.

FELIS CATUS, var. ε, CÆRULEUS, id. ibid. p. 522.

FELIS ANGORENSIS, Schreb. Säugeth. (1778) Th. iii. p. 397, tab. cvii. B. fig. 2.—Gmel. Syst. Nat. (1788) vol. i. pt. 1, p. 80, sp. 6, var. γ.

FELIS CATUS (DOMESTICA), Schreb. Säugeth. (1778) Th. iii. p. 397, tab. cvii. B. fig. 1.

FELIS HISPANICUS, Gmel. Syst. Nat. (1788) vol. i. pt. 1, p. 80, sp. 6, var. δ.

FELIS CÆRULEUS, id. ibid. var. ε.

FELIS RUBER, id. ibid. var. ζ.

CHAT DE NEPAUL, F. Cuv. Hist. Nat. Mamm. (1826) vol. iii. pl. 126 (hybrid).

FELIS TORQUATA, Temm. Mon. Mamm. (1827), App. p. 255.—Sykes, Proc. Zool. Soc. (1831) p. 102 (hybrid?).

FELIS MANICULATA, Jenyns, Man. Brit. Vert. Anim. (1835) p. 15. sp. 14.

FELIS BOUVIERI, Alph. Milne-Edw. MS. (wild Domestic Cat).

FELIS MEGALOTIS, Müller, Verhand. Natuur. Geschied. Zool. 1839-44, pt. 1.—Id. Over Zoogd. Ind. Archip. p. 54 (hybrid).

Existing records would seem to prove that the Cat has been tamed and kept by man in a domestic state as far in the remote past as 2000 to 2500 years before the Christian era. In Egypt, which country of course furnishes us the major part of the evidence of the Cat's antiquity, this animal was of the utmost importance, being in many parts of the land worshipped as a deity, and treated with great respect in all sections of the kingdom. The goddess Pasht or Bubastis was represented with a Cat's head upon the body of a woman, and was regarded as the especial deity of Cats. At Beni-Hassan is a temple dedicated to her, built in the time of Thothmes IV., 1500 years before Christ; and behind the building are pits containing numbers of Cats' mummies.

Herodotus states, lib. ii. 65, that nothing was more remarkable than the respect paid to their sacred animals by the Egyptians; and when a cat died, every inmate of the house shaved his eyebrows; and if a dwelling burned, the cats were to be saved at every hazard. Diodorus Siculus relates (lib. i. 83) that a Roman soldier once killed a cat in Egypt by accident, and so infuriated were the people that, although at the time the country was under the dominion of the Romans, nothing would satisfy them but the offender's death. The king in vain sent messengers to explain that the animal was accidentally killed; nothing would quiet the mob; and the soldier was slain in the presence of the historian. From Egypt the Domestic Cat was probably introduced into Italy and Greece; and a fresco painting of a Cat was discovered in Pompeii. Prof. Rolleston (Journal of Anatomy & Physiology, 1868, p. 47) states that in Western Europe and in Italy there is evidence to show that the Cat and Common Marten were domesticated nine hundred years before the time of the Crusades. He says the Mustela foina was kept in domestication, and is the Cat or γαλη of the ancients, while Mustela martes was named γαλη ἄγρια, and Viverra genetia Ταρτήσσια γαλη. Additional records of the existence of the Cat in a domesticated state might easily be produced; but sufficient has been given to show that it has so existed from the very earliest times, and its origin is of such great antiquity as to be buried in obscurity. It is not improbable that the original Domestic Cat was derived from several strains, of which possibly the most conspicuous were F. caffra, F. chaus, and F. catus. In the Middle Ages, according to Mivart

FELIS DOMESTICA.

(The Cat, p. 4), great value was set upon the Cat, and in certain European countries a heavy fine was imposed upon any one who killed this animal, the compensation being as much wheat as would form a pile sufficient to cover the animal to the tip of its tail when held vertically with its muzzle resting on the ground. The Domestic Cat crosses readily with any or all of the wild species with which it may come into contact; and the hybrids thus produced are fertile. Such crosses are always to be met with in countries where wild and domestic Cats are found; and they have at times been the cause of no little difficulty to naturalists, and of much confusion in determining species and in the synonymy. Generally, however, they carry in their appearance the evidence of their impure descent, and can be detected by any one who has studied these animals carefully. The different hybrids usually seen are those produced by the Domestic Cat breeding with F. catus in Europe, F. chaus and F. caffra in Africa, and F. ornata, F. chaus, and F. rubiginosa in India. The Domestic Cat also probably interbreeds with F. manul in Asia. In Ceylon the late Mr. Blyth (Proceedings of the Zoological Society of London, 1863, p. 184) was assured by Dr. Kelaart that he had seen a hybrid between the Domestic Cat and F. viverrina. In Paraguay, Azara states, (Natural History of the Quadrupeds of the Paraguay and the River La Plata, translated by W. P. Hunter, p. 173), though not on his own authority, that the Cat has crossed with two of the native wild species, viz. F. jaguarondi and F. eyra. Pennant (History of Quadrupeds, vol. i. p. 293) also states that the specimen described by him as having "swam on board a ship at anchor off the coast of Bengal," and which is supposed to have been F. viverrina, bred with the female cats, which twice produced young. "I saw," he says, "one of the offspring, which was marked in the same manner as the male parent, but the ground-colour was cinereous." E. L. Layard (Catalogue of the South-African Museum, 1862) also remarks that "F. caffra intermingles freely with the domestic race which has been imported by the European settlers, and the mixed progeny possesses all the ferocity and blood-thirstiness of the wild parent." There are many races of the Domestic Cat, some of which are distinguished by peculiarities that are apparently restricted to certain countries only. Some of them are:—the tailless cats with lengthened hind legs of the Isle of Man; those with truncated tails, as mentioned by Darwin (Animals and Plants under Domestication, vol. i. p. 47), inhabiting the Malayan archipelago, Siam, Pegu, and Burma; cats with drooping ears from China. Some races also are noted for lengthened fur, like the Angora or Persian breed, supposed by some to be derived from

Captain Owen (Narrative of Voyages, vol. ii. p. 180) states that at Mombas, on the east coast of Africa, all the cats are covered with short stiff hair instead of fur. The Domestic Cat differs from some of the wild species in the first inferior milk-molar, as mentioned by De Blainville (Ostéographie, Felis, p. 65); and I have seen a race of this animal without any teeth at all, which fact did not seem to render these cats incapable of masticating their food without difficulty. Rengger (Säugethiere von Paraguay, 1830, p. 212) says that the domestic cat which has bred for 300 years in Paraguay is one fourth smaller than the European cat, has a more lanky body, and short, shiny, scanty hair that lies close, especially on the tail. In another part of South America, according to Roulin (Comptes Rendus de l'Académie Royale des Sciences, tome vi. p. 346) the introduced cat utters no longer its rest-destroying nocturnal howl. It is a pity that this race cannot exterminate and supplant all others of the domestic breed. Near Maldonado in La Plata, Darwin (Zoology of the Voyage of the 'Beagle,' Mammalia, p. 20) shot a Domestic Cat which seemed perfectly wild; and this specimen was carefully examined by Mr. Waterhouse, who only found it remarkable for its great size. The colours of the Domestic Cat are numerous, consisting of black, white, striped black on a grey ground, tortoise-shell, grey, mouse-colour, sandy, and brown. Black Cats generally have yellow eyes; white ones have sometimes blue eyes, and are then usually deaf; sometimes their eyes are different in colour—one blue, the other yellow tinged with green. Tortoiseshell cats are mostly females, a male of this colour being a great rarity. Cats from Siam are of a fawn- or mousecolour. The Angora cat is noted for its great size and its long soft fur. This race presents various colours in individuals, such as white, greyish, a mixture of these two; and I have seen a remarkably fine male of a uniform mouse-colour. It seems that this race is not characterized by any particular hue for the fur. The tails of Domestic Cats vary greatly in length; and some have a lengthened tuft of hair on the tip of their ears; this, however, is derived from their ancestor, such as F. chaus, and distinguishes those in India, although sometimes this peculiarity is exhibited by individuals in other countries. Occasionally the points by which a race is known are derived from an accident which has happened to a parent; and Mivart (The Cat, p. 7) records an instance of a female

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cat having her tail so much injured by a cart-wheel passing over it, that it was deemed best to cut it off near the root. Afterwards she had two litters; and in each, one or more of the kittens had merely stumps of tails, the others having tails of the usual length.

The Domestic Cat begins to breed when about a year old, and has from five to eight young at a time. The period of gestation is fifty-five days. Birds and small quadrupeds constitute the usual prey; but the Cat is also extremely fond of cow's milk and fish, which must be considered an acquired taste; for the first of these could not be obtained by the wild ancestor, and the second could but rarely be procured, although one species of so-called fishing-cat exists at the present day, whose diet does mainly consist of fish. The sense of smell in the Cat is not well developed; and its chief reliance in catching prey is quick sight, astonishing rapidity of movement, together with sharp claws and teeth.

The actions of the Domestic Cat in approaching, springing upon, and seizing a mouse, exactly portray, on a greatly reduced scale, those of its large relative the Tiger when attacking its prey in the jungle. The same graceful motions of the lithe body are seen in both creatures; and the stroke from the armed paw is delivered by both animals alike. Heat is much enjoyed by the cat; and the fire-side in winter, and the sunny side of buildings are its coveted resorts. Water, as a rule, is avoided; and it is only with the greatest reluctance that the cat permits any portion of its body to become wet. The Domestic Cat is subject to the attacks of various parasites, which exist in the stomach or its lining membrane, and also in the liver and lungs. These parasites are the causes of different forms of sickness, such as colic, diarrhea, inflammation of certain organs, convulsions, and general wasting away. Dr. Cobbold, in his work on the Internal Parasites of our Domesticated Animals, gives a long list of the worms inhabiting the Cat's body, and their effect upon its health and manner of death. Tapeworms of various species, procured by the cat from the livers of mice, which contain the larvæ of the parasite, are very frequently present in the animal's stomach and cause its death. Cats are also subject to mange, consumption, and other disorders, and are often infested with fleas similar to those found upon the dog, but smaller.

As a rule, the Domestic Cat is more attached to buildings or certain localities than to persons; but it is frequently possessed of an affectionate disposition, and quickly recognizes any one from whom it has received kindness, evincing its pleasure by loud purring, and with elevated tail endeavouring to rub itself against the individual whose attention it solicits. In its habits the cat is cleanly, and passes much time in licking and smoothing its fur with its tongue. This member is rough, caused by numerous conical papillæ whose points are set backwards and make the tongue feel something like a rasp when drawn across the finger.

The utility of the cat to man is exemplified in many ways, but in none more curious and striking than the fact that if there were no cats there would be no clover. At first sight there would seem to be no relationship whatever between these widely divergent forms; for the quadruped does not care for clover, and this grass would not appear, to a casual observer, to be in any way dependent upon the cat. But Darwin explains it in this way ('Origin of Species,' 6th ed. p. 57):—Clover, in England, is fertilized by humble-bees. Field-mice are very fond of the nests and combs of these insects, and destroy many of them. Cats in their turn prey upon field-mice and keep them from undue increase; so that if there were no cats, field-mice would multiply so greatly that they would destroy all the humble-bees, and consequently clover (from want of fertilization) would become extinct.

The animal described by Müller (l. c.) as Felis megalotis is undoubtedly a hybrid, probably between F. chaus and a Domestic Cat. The habitat, Timor, may be questioned, as no Wild Cats are known to inhabit that island. The following description I took from the type in the Leyden Museum:—Colour light buff with greyish spots, most numerous on the back and hind quarters. Legs barred with blackish brown. Top of head blackish brown, with a yellowish streak in the centre. Two reddish stripes on cheek, and two reddish bands across the breast, blackish in the centre, the upper band very indistinct. Around the body are irregular indistinct bars of reddish buff, darkest on the back, where they are broken into spots. Tail nearly as long as the body, dark grey, rufous on top, with two or three dark brown bands near the tip, this last being also dark brown. Underparts buff. Ears not alike: left one black, with a band of rufous in centre; right one nearly all rufous mottled with black.

There is a specimen of a Cat in the Paris Museum to which Prof. A. Milne-Edwards has given the MS. name of Felis bouvieri. It was said to have come from the Island of Cap Vert, near Senegal. I believe it to be merely a Domestic Cat run wild, and have therefore placed this MS. name among the synonyms of the Domestic Cat.



CYNAILURUS JUBATUS.

CHEETAH. HUNTING LEOPARD.

FELIS JUBATA, Erxl. Syst. Reg. Anim. (1777) p. 510. sp. 6.—Schreb. Säugeth. (1778) Th. iii. p. 392, tab. cv.—Gmel. Syst. Nat. (1788) vol. i. pt. 2, p. 79. sp. 11.—Pall. Zoog. Rosso-Asiat. (1811) vol. i. p. 19.—Fisch. Zoogn. (1814) p. 224. sp. 7.—Desm. Nouv. Dict. Hist. Nat. (1816) vol. vi. p. 101.—Id. Mamm. (1820) no. 341, pl. ix. fig. 3.—F. Cuv. Hist. Nat. Mamm. (1823) vol. ii. pl. 145.—Cuv. Ossem. Foss. (1825) vol. iv. p. 430.—Temm. Mon. Mamm. (1827) vol. i. p. 89, and Append. p. 250.—Less. Man. Mamm. (1827) p. 182. sp. 485.—Fisch. Syn. Mamm. (1829) p. 201. sp. 7.—Smuts, Dissert. Zool. (1832) p. 26.—Jard. Nat. Libr. vol. xvi. p. 197, pl. xv. —Harris, South Africa (1838) 8vo, Append. p. 372.—Less. Comp. Buff. (1838) vol. i. p. 409.—Blainv. Ostéog. (1839-64) vol. ii. Atl. pls. iv., x., xi., xii., xiii., xiii., xiv.—Harris, Game & Wild Anim. S. Afr. (1840) pl. xxviii. sp. 2.—Gerv. Hist. Nat. Mamm. (1855) p. 94.—Loche, Cat. Mamm. Algér. (1858) p. 8. sp. 14.—Bartl. Proc. Zool. Soc. (1861) p. 141.—Blyth Proc. Zool. Soc. (1863) p. 181. sp. 1.—Kirk, Proc. Zool. Soc. (1864) p. 653. sp. 28.—Murr. Geog. Distr. Mamm. (1866) p. 100.—Tristr. Proc. Zool. Soc. (1866) p. 91. sp. 61.

—Jerd. Mamm. Ind. (1867) p. 114. sp. 117.—M'Mast. Notes Jerd. Mamm. Ind. (1870) p. 38.

HUNTING LEOPARD, Penn. Hist. Quad. (1793) p. 284. sp. 184, pl.

CYNAILURUS JUBATUS, Wagl. Natür. Syst. Amphib. (1830) p. 30.—Severtz. Rev. et Mag. Zool. (1858) p. 388.

FELIS GUTTATA, Less. Compl. Buff. (1838) vol. i. p. 409.—Murr. Geog. Distr. Mamm. (1866) p. 101.

CYNOFELIS JUBATA, Less. Nouv. Tab. Règn. Anim. (1842) p. 49. sp. 509.

CYNOFELIS GUTTATA, Less. Nouv. Tab. Règn. Anim. (1842) p. 49. sp. 510.

GUEPARDA GUTTATA, J. E. Gray, Proc. Zool. Soc. (1867) pp. 277 & 396, t. 24.—Id. Cat. Carn. Mamm. (1869) p. 39. sp. 1.

FELIS MEGABALIA, Heugl. Zeitschrift Ges. f. Erdkunde, Berlin, (1868) vol. iii. p. 53.

CYNAILURUS GUTTATUS, Fitzin. Sitzgsber. Akad. Wiss. Wien (1869).

CYNAILURUS VENATICUS, id. ibid.

CYNAILURUS VENATICUS, id. ibid.

FELIS LANEA, Sclat. Proc. Zool. Soc. (1877) p. 532, pl. 55.

HAB. Central and part of Southern India; in the north-west, from Kandish, through Sind and Rajpootana, to the Punjab. South-western Asia to Syria and Mesopotamia (Jerdon). Africa.

THE Cheetah or Hunting Leopard is the Panther of the ancients, who (together with the Arabs of the present day), as stated by Jerdon, considered it a hybrid between the Lion and the Pard or Leopard. From having non-retractile claws it cannot be retained in the genus Felis; for in this respect it differs greatly from the true Cats, and approaches the Dogs. In its disposition also, and the attachment it shows to man, and as an assistant in the chase, it is very dog-like. But the dentition is that of a Cat; and therefore it is properly retained as a member of the present family. It is a native of India, Southwestern Asia, and Africa, specimens from these countries being very similar in appearance, in fact varying much less in their colour and markings than is usually the case among the spotted Cats; and the disposition and habits of the animals are the same, irrespective of their habitat. Some authors have thought that there were two species, distinguished by the presence or absence of long hair upon the ridge of the neck, resembling a mane; and M. Duvernoy, in a memoir upon this animal, published in 1834 by the Natural-History Society of Strasbourg, adopting the opinion expressed by Hermann, endeavoured to prove the existence of two species, founded upon the characters just mentioned, together with a slight difference of colour. I do not consider that there are two species of this form, but that the differences claimed as indicating specific distinction are those exhibited by individuals of different ages (such as the presence or absence of mane), while variation of colour in the pelage is the rule among all species of Felidæ. I am not aware that any osteological differences have been claimed to exist in these two supposed forms, and I have not been able to discover any. This species becomes very tame in captivity, and much attached to its master, following him about, when permitted, like a dog. Jerdon mentions one that was brought to him when but a few days old, which, being clad like those depicted in the accompanying Plate, resembled so little an adult Cheetah that it was several days before he recognized the species. He reared it with some greyhound puppies; and they became excellent friends, playing and frolicking with each other even when nearly full-grown.

CYNAILURUS JUBATUS.

It would follow its master when he went out on horseback, occasionally sitting down for a few moments, and then bounding after him. It liked to be noticed, and expressed its pleasure by purring. As it increased in size it commenced to attack sheep; but being whipped for this it turned its attention to donkeys, and was well kicked by these otherwise submissive creatures. Its owner then had some gazelles (Gazella bennettii) brought and let loose before it. The Cheetah always caught them easily; but it did not understand how to pull them down; and occasionally, if the antelope got too far away, it discontinued the chase—although, if a greyhound was slipped, it would follow the dog. When it was beginning to understand its duties its master parted with it, as he was going on field service. This species preys upon antelopes of various kinds, which it is accustomed either to stalk and then spring upon from some convenient hiding-place, or else to catch when running. At times it is said to carry off sheep. When taken into the field to hunt, it is carried in a cart, with its eyes blindfolded; and when game is perceived by the driver the cart is brought as near as circumstances will permit, and the Cheetah's eyes are uncovered. As soon as the animal catches sight of its prey it leaps down from the cart, frequently on the opposite side from that on which the game is, and approaches it either stealthily, taking advantage of every inequality in the ground, or else by galloping quietly along until the quarry becomes frightened and starts off, when immediately the Cheetah bounds rapidly forward with a speed that is almost inconceivable, and generally arrives within springing-distance in a few moments, when it launches itself upon the frightened antelope, and drags it to the ground, seizing it at the same time by the throat. The keeper then runs up as quickly as possible, cuts the throat of the struggling game, and, collecting some of the blood in a wooden ladle, thrusts it under the nose of the Cheetah, who laps it up; and while thus occupied the hood is slipped over its head. If this species is unsuccessful on these expeditions, and its prey escapes, it either comes trotting sulkily back to the cart growling out its displeasure, or walks about, according to Mr. Vigors, in a "towering passion," after which it submits to be led back to the waggon. Jerdon's tame animal when left alone uttered a plaintive cry, termed by Blyth a "bleat-like mew." The hunters assert that this creature, if captured when young, is useless for training, as the instruction of its parents is necessary for it to learn how to pull down its prey.

Mr. Sclater has conferred upon a Cheetah living in the Gardens of the Zoological Society at Regent's Park the name of Felis lanea, as probably representing a species distinct from C. jubatus. The characters given as specific are the denser fur and the isabelline hue of the body, covered by dark fulvous spots, the denser tail, and the absence of the black line between the mouth and the eye. The animal was stated to have come from Beaufort West, in the Cape colony, South Africa. From the thickness of the fur I should judge it to be an inhabitant of elevated plateaus, where the cold is frequently severe; and, like the Leopards and Tigers which dwell at similar altitudes, the hair is naturally longer and more dense than is the case with individuals of the same species living in warmer climates. The spots are lighter than in any Cheetah I have ever seen; but that fact is not of itself of much importance, as the colour of such markings varies greatly in all spotted Cats, and it is by no means unusual to see some members of the same species spotted with black, and others with rufous or red. The slightly bushy appearance of the tail is only in keeping with the longer fur of the body—a peculiarity equally noticeable in Leopards from Persia and China, and also in Tigers from the last-named country. The size of the animal is certainly larger than that usually seen among individuals of this species; but there is a specimen of Cheetah from South Africa now in the British Museum which I consider to be fully as large, if not larger, and which presents the coloration of pelage usually seen, with the spots jet-black in colour. The absence of the black mark on the face is unusual, though I have observed that it has been occasionally wanting in some of the smaller species of Cats when two lines upon the face were always conspicuously present in the majority of individuals. I have examined this F. lanea as carefully as was possible, and compared it with the Indian Cheetahs in the adjoining cage, and I have not been able to persuade myself, mindful of the great variations to which all the Cats are liable, that it represents a distinct species; and until it can be proved, from an examination of the skull, to be really specifically different, I prefer to regard it merely as a lighter-coloured, more thickly furred form of the ordinary C. jubatus, just as the long-haired Tigers and Leopards are only F. tigris and F. pardus from colder latitudes.

General colour light buff. A black bar from nose to mouth across the middle of upper lip, and a narrow one across the cheek from corner of the eye. Chin and throat buffy white. The entire rest of body thickly spotted with black or rufous. A short mane on hind neck and between shoulders. Tail long, same colour as body, thickly spotted with black, and tipped for from 3 to 4 inches from the end with black.

CYNAILURUS JUBATUS.

Specimen in British Museum.—Nose to root of tail 4 feet $2\frac{1}{2}$ inches, tail 27 inches. Very large, of a greater size than F. lanea, and covered with large jet-black spots.

Young.—Head, back, and tail greyish white, rest of body and legs dark chestnut.

The skull of this species is greatly arched when seen in profile, the forehead very high. The face is short and broad, as are also the nasals. Orbits large, incomplete. Brain-case wide, full, and rounded. The processes of the maxilla are rounded and extended considerably beyond the fronto-articulation of the nasals. These last are also depressed medianly, forming a groove at the symphysis; and the anterior portion of the prefrontal bone is also greatly depressed at the centre, thus continuing the groove of the nasals. Interorbital space wide. Upper canines moderate in size.



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