LXVII. Description of a new species of North American Marten (Mustela vulpina)

C.S. Rafinesque

LXVII. *Description of a new Species of North American Marten* (Mustela vulpina). *By* C. S. RAFINESQUE *.

THE regions watered by the Missouri are inhabited by many animals as· yet unknown to the zoologist, although many have been noticed by travellers. A species of marten has lately been presented to the Lyceum of Natural History in New York, which was brought from that country, and appears to belong to a peculiar species, very different from the common martens of Europe, Asia and America, although it has in common with it the character of the yellow throat; but the head, feet and tail afford so many peculiar characters, that no doubt can be entertained of its diversity. I have therefore given to it the name of *Mustela vulpina* or Fox Marten, owing to its head and tail being somewhat similar to that of a fox.

MUSTELA VULPINA.

Definition.—Brown; three large yellowish spots underneath on the throat, breast, and belly: cheeks, inside of the ears, and a spot on the nape, white: tail tipped with white, one-third of its total length: feet blackish : toes white.

Description.—This animal is of a fine shape; its size is rather above mediocrity, being about half a foot high, and the total length being about twenty-seven inches, whereof nine form the tail. The general colour of the fur is a drab brown, and it is neither coarse nor very fine. The head is elongated oblong, about four inches, long-shaped like that of a fox: the snout is narrow: the nose is black, notched and granulated, furnished on each side with black whiskers two inches long: there are three long black hairs or *vibrissæ* above each eye, and a few shorter ones scattered behind them on the cheeks, chin and tip of the lower jaw, which is white: the cheeks are whitish, and there is a white spot on the nape of the neck : the ears are large, broad, and white inside. There are three large oblong spots on the throat, breast and belly; this last is the largest: that on the breast, the smallest. The fore legs are shorter then the hind ones, and have behind three very long hairs or *vibrissæ:* the feet and toes of all the legs are covered with long fur : the former have a dark brown or blackish ring, and the latter are of a dirty white : there are five long toes to all the feet, of which the inner one is the shortest: the nails are white, retractile, and shorter than the fur. The teeth are as in the genus *Mustela,* and white ; those of the lower jaw are larger and stronger: the grinders are four on each side: they are broad, trifid, with the middle lobe sharp and very long: the tusks or dog-teeth are very strong, curved, and approxi-

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mated, leaving a very small place for the incisores, which are very small, very short and flat, the two lateral ones on each side are situated diagonally; the second behind, and the two middle ones are only half the size of the others. The tail is bushy, particularly at the top, where there is a white pencil of long hairs; the brown of the remainder is darker than on the body.

From the above accurate description it will appear evident that this animal is very different from the common marten of North America. It must be a very ferocious little animal, which is indicated by the strength of the teeth.

LXVIII. *On a new Method of treating Factorials and Figurate Numbers. By Mr.* PETER NICHOLSON.

To Mr. Tilloch.

SIR, — As the following method of treating factorials and figurate numbers is new, I hope you will have the goodness to insert it in your valuable publication The Philosophical Magazine, as it will be found to apply to many of the most useful parts of algebra: as in the binomial theorem, in equations of all dimensions, in combinations, &c.

London-street, May 17, 1819.   PETER NICHOLSON.

FACTORIALS.

Definition. —An algebraic product of which the difference between every two adjacent factors is equal to the same given number, is called a factorial.

Notation.—In a factorial are to be considered the number of factors, otherwise called the exponent, the first factor, and the common difference, whether $+$ or $-$.

Let m be the first factor, n the number of factors, and c the common difference; then every factorial may be thus indicated $m^{n|c}$: let $n=4$ and $c=1$, then will $m^{n|c}=m^{4|1}=m(m+1)$ $(m+2)$ $(m+3)$. Again, if $n=5$ and $c=-1$, then will $m^{n|c}=$ $m^{5|\bar{1}}=m(m-1)$ $(m-2)$ $(m-3)$ $(m-4)$. Again, let $m=-p$, and $c=-e$; then will $m^{n|c}=(-p)^{n|\bar{e}}$, which will be affirmative or negative, according as n is even or odd. Thus let $p=3$, $n=4$, and $e=2$; then $(-3)^{4|\bar{2}}=(-3)$ (-5) (-7) $(-9)=945$. Again let $n=5$; then $(-3)^{5|\bar{2}}=(-3)$ (-5) (-7) (-9) $(-11) = -10395.$

Proposition.—Any two factorials in which the base of the one is equal to the sum formed by adding the product of the exponent
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