

## The CANADIAN MUSK RAT\* and the MUSCOVY MUSK RAT†.

THOUGH these two animals have received the same denomination of *musk rats*, and have some common characters, they ought not

\* The musk beaver has a thick blunt nose, short ears almost hid in the fur, and large eyes. The toes on each foot are separated, the hind ones being fringed on the sides with strong hair, closely set together. The tail is compressed sidewise, very thin at the edges, and covered with small scales, intermixed with a few hairs. The head and body are of a reddish brown, and the breast and belly of an ash-colour, tinged with red. The fur is very fine. The length, from nose to tail, is one foot, and that of the tail nine inches. In the form of its body, it exactly resembles a beaver; Pennant's *Synops. of Quad.* p. 259.

It is called *ondatra* by the North American savages; *Rat musqué de Canada*.

Musculus; Smith's *Virginia*, p. 27.

Musquak; Josselyn's *Voy. New England*, p. 86.

Musk rat; Lawson's *Carolina*, p. 120.

*Castor sibericus, cauda longa, compressio-lanceolata, pedibus filis*; Linn. *Syst. Nat.* p. 79.

*Castor cauda verticaliter plana, digitis omnibus a se invicem separatis*; Brisson's *Quad.* p. 93.

*Rat musqué*; Charlevoix, *Nouv. France*, p. 157. *Leferlet N. Fr.* p. 350. *Mém. de l'Acad. des Sciences, année 1726*, p. 323.

† The long nosed beaver has a long slender nose, like that of a shrew mouse, no external ears, very small eyes, and a tail compressed sidewise. The head and back are dusky, and the belly is of a whitish ash colour. The length, from nose to tail, is seven inches, and that of the tail is eight inches; Pennant's *Synops.*

to

to be confounded. They should likewise be distinguished from the pilori, or musk rat of the Antilles: They all form different species, and belong to different climates; the first being found in Canada, the second in Lapland and Muscovy, and the last in Martinico, and other of the Antilles islands.

The Canadian musk rat differs from the Muscovian, by having all its toes separate, conspicuous eyes, and a very short muzzle. But the musk rat of Muscovy has the toes of the hind feet webbed\*, very small eyes, and a long muzzle, like that of the shrew mouse. Both have long compressed tails, and differ from the musk rat of the Antilles in this and several other characters†. The latter has a very short tail,

In Sweden it is called *Dylasan*.

*Mus aquaticus*; *Cloß Exotic. Aud.* p. 373. *Aldeov. Quad. Digit.* p. 448. *Mos. Wernic. p.* 334.

*Muscovy or musk rat*; *Rat's Synops. Quad.* p. 217. *Nouv. Gen. Parap. IV.* p. 373.

*Castor cauda verticaliter plana, digitis omnibus membranis inter se connatis*, . . . *Mus Moschiferus*; Brisson, *Regn. Anim.* p. 135.

*Castor moschatus, cauda longa compressio-lanceolata, pedibus palmatis*; Linn. *Syst. Nat.* p. 79.

\* Quelli exigui et vix conspicui. . . . Digiti majores membranis connexi ad commodius natandum, rostri pars superior firma, prominens, et pene unciam longa, nigricans, eaque formâ prœdita, ut inflex suis aut talpæ terram vertere possit; *Cloß Exotic. Aud.* p. 375.

† The musk rats of the Antilles, called by the French *pilori*, generally burrow under ground, like the rabbits, and are nearly of the same size; but they have no resemblance to

tail, which is cylindrical\*, like that of the common rat. But both of the former have very long tails. The head of the Canadian musk rat resembles that of the water rat, and the head of the Muscovy kind resembles that of the shrew mouse.

In the Memoirs of the Academy of Sciences, ann. 1725, there is a very complete description of the Canadian musk rat. M. Sarrafin, King's physician at Quebec, and correspondent of the academy, has dissected a number of these animals, and made some singular remarks. By comparing his description with ours, we are persuaded that the musk rat of Canada is the same animal whose figure is here represented.

The Canadian musk rat is of the size of a small rabbit, and of the figure of a rat. Its head is short, and resembles that of the water rat.

our large rats, except that they are white on the belly, and black or tawny on the rest of the body. They smell so strong of musk, that their retreats are easily discovered by the perfume; *Hist. Nat. des Antilles*, p. 124.

\* The piloris are a species of wood rats, three or four times larger than the common kind. They are almost white; they have a very short tail; and smell strongly of musk; *Nouv. Voy. aux Isles de l'Amérique, tom. I. p. 438*. The piloris are found in Martinico and some of the other Antilles. They are musk rats, of the same figure with the common rat, but so large, that four of our rats would not weigh a single piloris. . . . They reside even in the huts; but are not so prolific as the common rat. . . . The piloris are natives of Martinico; but the common rat never appeared there till it was frequented by ships; *Hist. Gen. des Antilles, par L. P. Tonn, tom. II. p. 582*.

Its hair is soft and glossy; and beneath the first hair there is a thick down, nearly resembling that of the beaver. Like other rats, its tail is long, and covered with scales; but its form is different; for, instead of being cylindrical, it is compressed laterally from the middle to the extremity, and roundish near the origin. The toes are not united by membranes, but garnished with long close hair, which assists the animal in swimming. Its ears are very short, and not naked, as in the common rat, but covered, both internally and externally, with hair. The eyes are large, their aperture being about three lines. In the under jaw there are two cutting teeth, about an inch long, and two shorter ones in the upper. These four teeth are very strong, and serve the animal for gnawing and cutting wood.

The singularities observed in this animal by M. Sarrafin are, 1. The great muscular force in its skin, which enables the creature to contract its body into a small volume: 2. The suppleness of the false ribs, which admits this contraction, and is so considerable, that the musk rat is enabled to pass through holes where much smaller animals cannot enter: 3. The manner in which the females discharge their urine; for the urethra terminates not, as in other quadrupeds, under the clitoris, but at a hairy eminence above the os pubis; and in this eminence there is an aperture that allows the urine to escape. This singular organization is peculiar to a few

species of animals, as the rats and apes, the females of which have three apertures. It has been remarked, that the beaver is the only quadruped whose urine and excrement are discharged by a common aperture. The female rats and apes are, perhaps, the only animals who discharge their urine by an aperture separated from the organs of generation. But this singularity is confined to the females, the structure of the males being the same with that of other quadrupeds. 4. M. Sarrafin farther remarks, that the testicles, which, as in other rats, are situated on each side of the anus, become, in the rutting season, very large in proportion to the size of the animal, their bulk being often equal to that of a nutmeg; but that, after this season, they diminish so greatly as not to exceed a line in diameter; and that they not only undergo a change of size, consistence, and colour, but even their situation is remarkably varied. In the same manner, after the season of love, the seminal vessels, the vasa deferentia, and all the organs of generation, are almost entirely obliterated: The testicles, which, during this period, were external and very prominent, retire within the body. They are fixed, like the other parts just mentioned, to the membrana adiposa. This membrane, by the redundant nourishment, gradually expands and increases till the arrival of the rutting season, when the organs of generation, which seem to be appendages of the membrane, unfold,

unfold, swell, and acquire their complete dimensions. But, when the redundant nourishment is exhausted by reiterated embraces, the membrane turns meager, contracts, and gradually retires toward the reins, carrying along with it the vasa deferentia, the seminal vessels, and the testicles, which last become so light, empty, and shrivelled, as hardly to be distinguishable. In the same manner, the seminal vessels, which, at the commencement of the rutting season, are an inch and a half long, are afterwards reduced to a line or two in diameter. 5. That the follicles which contain the perfume of this animal in the form of a milky humour, and which are situated near the organs of generation, undergo the same changes. In the rutting season, they are large and turgid, and their perfume is so strong and highly exalted, that it is perceptible at a great distance. They afterwards contract, shrivel, and at last entirely disappear. This change in the follicles, which contain the perfume, is more rapid and complete than that which happens to the organs of generation. These follicles are common to both sexes, and, in the rutting season, contain a considerable quantity of milky humour, secreted by vessels, which, in the male, terminate at the extremity of the penis, and towards the clitoris in the female. This secretion is performed, and the humour evacuated nearly at the same place as the urine in other quadrupeds.

All these peculiarities remarked by M. Sarrafin, were worthy the attention of so able an anatomist. In the history of the water rat, the mole, and short-tailed field mouse, we have mentioned similar changes in the organs of generation. Thus we find quadrupeds, though in their general structure they resemble the other animals of the same class whose organs of generation are annually obliterated and renewed, nearly in the same manner as the milts of fishes, and the seminal vessels of the calmar, whose changes, annihilation, and reproduction, have been formerly described\*. These shades by which Nature connects beings apparently the farthest removed from each other, these singular examples, should never be neglected; because they belong to the general system of organization, and unite the most distant points of animated bodies. But this is not the place for expatiating on the general conclusions which might be drawn from these singular facts, nor on the close connection they have with our theory of generation. They will be anticipated by the intelligent reader; and we shall soon have occasion to exhibit them to greater advantage, by adding them to other facts of a similar nature.

As the Canadian musk rat belongs to the same country with the beaver, dwells on the water, and has nearly the same figure, colour, and fur, they have often been compared to each other.

\* See above, vol. ii. p. 185.

It

It is even asserted, that a full grown musk rat, at first sight, may be mistaken for a beaver of a month old. They differ greatly, however, in the form of the tail, which, in the beaver, is oval and flat horizontally; but, in the musk rat, it is very long and flat, or compressed, vertically. Besides, these animals have a great resemblance in their dispositions and instincts. The musk rats, like the beavers, live in society during the winter. They make little huts, about two feet and a half in diameter, and sometimes larger, where several families associate together. It is not the object of this operation, like that of the marmots, to sleep during five or six months, but solely to shelter them from the rigour of the air. These houses, or huts, are round, and covered with a dome about a foot thick. Their materials are herbs and rushes interlaced, and cemented with earth, which they plash with their feet. They are impenetrable to rain, and furnished with steps in the inside, to prevent their being injured by inundations from the land. These huts, which serve the animals for a retreat, are covered, during winter, with several feet of snow and ice, without incommoding them. They lay not up provisions, like the beaver, but dig a kind of pits or passages under and round their habitations, to give them an opportunity of procuring water and roots. Though thus associated, they pass the winter in melancholy; for it is not the season of their amours. During all this period,

period, they are deprived of light; and, when the gentle breezes of the spring begin to dissolve the snow, and to discover the tops of their habitations, the hunters open the dome, suddenly dazzle them with the light, and kill or seize all those who have not had time to retire to their subterraneous galleries, into which they are still followed; for their skin is valuable, and their flesh makes tolerable good eating. Those who escape the vigilance of the hunter quit their habitations at this time. They wander about during summer, but always in pairs; because it is the season of their amours. They feed upon herbs, and voraciously devour the fresh productions of the earth. By this redundancy of excellent nourishment, the *membrana adiposa* expands, increases, and is filled with fat; the follicles are also renewed and filled; the organs of generation unfold and swell; and then the animals acquire an odour of musk, so strong as to be hardly supportable. This odour is perceived at a distance; and, though agreeable to Europeans\*, is so disgusting

\* The musk rat of North America is somewhat thicker and longer than our water rat. Water is its element; but it sometimes goes upon land. It has a flat tail, from eight to ten inches long, an inch broad, and covered with small black scales. Its skin is reddish, and the fur very fine. Near the follicles there is a matter which has a most agreeable smell of musk, and does not incommode those to whom musk is offensive. In winter, when they are killed for the sake of their fur, they have no odour; but it begins to be perceptible in spring, and continues strong till autumn. . . . The flesh, which

is useful to the savages, that they have denominated a river, inhabited by a vast number of these rats, the *Stinking River*.

The females bring forth annually five or six young. Their time of gestation is not long; because they come in season in the beginning of summer, and the young are pretty large in the month of October, when they retire with their parents into the huts, which are built every year; for it has been remarked, that they never return to their old habitations. Their cry is a kind of groaning, which the hunter counterfeits, in order to make them approach him. Their fore-teeth are so strong, and so proper for cutting, that, when shut up in a box of hard wood, they soon make a hole sufficient for their escape, which is a faculty they have in common with the beaver. They swim neither so swift nor so long as the beaver; but often go upon the ground. They do not run well, and they walk still worse, rocking from side to side, like a goose. Their skin preserves the smell of musk, which renders their fur not so generally agreeable; but the down, or under hair, is used in the manufacturing of hats.

has no flavour of musk, makes excellent food; *Descript. de l'Amér. Septentr. par DuRoi, tom. II. p. 258.*—The musk rats of Canada diffuse a fine odour, which is stronger than that of the civet or gazelle; *Voyage de Huertas, tom. I. p. 95.*—The American savages have such an aversion to the odour of the musk rat, that they give the animal the epithet of *stinking*; *Mém. de l'Acad. des Sciences, année 1725, p. 327.*

These

These animals are not remarkably wild, and, when taken young, are easily tamed. They are then very pretty; and their tail, which is long and flat, and makes their figure disagreeable, is, at this period of life, very short. They sport with as much innocence and gentleness as young cats. They never bite\*, and might be easily reared, if their odour were not disagreeable.

The Canadian and Muscovy musk rats are the only northern animals which yield a perfume; for the odour of the *castoreum* is extremely offensive; and it is only in warm climates that the animals which furnish the true musk, the civet, and other perfumes, are to be found.

The musk rat of Muscovy would, perhaps, exhibit to us peculiarities similar to those of the Canadian; but it seems not to have been dissected, or examined alive by any naturalist. We can only mention its external form, that preserved in the King's cabinet having been sent from Lapland in a dry state. We must, therefore, regret that so little is known of this animal.

\* The musk rats of Canada, called *ondatra* by the Hurons, eat herbs, and the pith of rushes about the lakes and rivers. When young, it is pleasant to see them eat and perform their little gambols. I had a very pretty one, which I fed with the pith of rushes, and an herb similar to the dandelion. They are not apt to bite; for I handled mine at pleasure, without the smallest danger of injury; *Voyage de Sagard Tenard*. p. 322. — The plant, which M. Sarsasin says the musk rat prefers to all others, is the *calamus aromaticus*.



Plate CXXXIII.



CANADIAN MUSKRAT.

Plate CXXXIV.



MUSCOVY MUSKRAT.