

THE PENNSYLVANIA MOLE.

IN Pennsylvania, says M. Kalm, there is a species of mole, which lives principally on roots. This animal digs, in the fields, small winding subterraneous alleys. In proportion to its size, it has more strength and rigidity in its paws than most other quadrupeds. In digging the earth, it uses its feet like oars. M. Kalm put one of them into his handkerchief; and he found, that, in less than a minute, it had made a number of small holes, as if the cloth had been pierced with a bodkin. It was very mischievous; and, whenever it found any objects in its way, it immediately perforated them with its teeth. I presented to it, continues M. Kalm, my ink-piece, which was made of steel; it began to bite the ink-piece; but was soon repelled by the hardness of the metal, and never afterwards inclined to bite any thing that was held out to it. This animal raises not the earth like the moles of Europe, but only makes small paths under the ground*.

These characters are not sufficient to give us a proper knowledge of the animal, nor enable us to decide whether it belongs to the mole-tribe.

* Voyage de Kalm, tom. II. p. 332.

THE BAT*.

THOUGH all beings are equally perfect in themselves, since they proceed from the hands of the same Creator; yet, in relation to man, some beings are more accomplished, and others seem to be imperfect or deformed. Of the former kind are all those whose figures appear to us to be agreeable and complete; because all their parts and members are proportioned, all their movements and functions are easy and natural. The latter kind of beings, which to us have a hideous aspect, comprehends all those whose qualities are noxious to man, whose nature is uncommon, and whose form differs from the ordinary

* This animal has long extended toes to the fore-feet connected by thin broad membranes, extending to the hind-legs. — The common bat has short ears, mouse-coloured fur, tinged with red: Its length is two inches and a half, and the extent of the wings nine inches; Pennant's *Synops. of Quad.* p. 371.

In Greek, *Naktis*; in Latin, *Vespertilis*; in Italian, *Notte, Nattola*, *Barbagello*, *Filipistrello*, *Pipistrello*, *Sportellino*; in German, *Fladermuis*; in Swedish, *Luderlapp*; in Polish, *Niesiepar*, *Vesperillo*; *Gefar. Hjs. Avi.* p. 766. *Icon. Avi.* p. 17.

Reg. Synops. Quad. p. 243.

Vesperillo marinus, caudatus, naso oreque simplici, auribus capite minoribus; *Lin. Syn.* p. 47.

Vesperillo vulgaris; *Klein. Quad.* p. 61.

Vesperillo marini coloris, pedibus omnibus pentadactylis, auriculis simplicibus. *Vesperillo major*; *Briss. Reg. Anim.* p. 224.

figures

figures from which we received our primary sensations, and derived those ideas which serve as models to our judgment. The head of a man upon the neck of a horse, and its body covered with feathers, and terminating in the tail of a fish, represents a picture of enormous deformity, for no other reason but because it unites what Nature has placed at the greatest distance. An animal, like the bat, which is half a quadruped and half a bird, and which, upon the whole, is neither the one nor the other, must be a monstrous being; because, by uniting the attributes of two opposite genera, it resembles none of those models presented to us in the great classes of Nature. It is an imperfect quadruped, and a still more imperfect bird. A quadruped should have four feet, and a bat should have feathers and wings. In the bat, the fore-feet, though they serve the animal for the double purpose of flying and of trailing its body on the ground, are neither wings nor feet. They are deformed extremities, the bones of which are enormously lengthened, and united by a membrane, which is neither covered with feathers nor with hair. They are a species of pinions, or winged paws, in which we see only a claw of an inch in length; and the other four long toes must act along with the former; for they have no proper movements or separate functions. They are a kind of hands ten times larger than the feet, and four times longer than the body of the animal. In fine, they are parts which have rather

rather the air of caprice than of a regular production. This membrane covers the arm, forms the wings or hands of the animal, unites with the skin of the body, and, at the same time, surrounds the legs, and even the tail, which by this whimsical conjunction, becomes, in some measure, one of its toes. To these dissimilarities and disproportions of the body and its members may be added the deformities of the head, which are often much greater: For, in some species, the nose is hardly visible, the eyes are sunk near the ear, and confounded with the cheeks: In others, the ears are as long as the body, or the face is twisted into the form of a horse-shoe, and the nose turned up like a cock's comb. All of them have small, obscure, covered eyes, a nose, or rather nostrils, ill-formed, and a mouth extending from ear to ear: They all likewise endeavour to conceal themselves, fly the light, inhabit dark places only, from which they never go out but during the night; they return at break of day, and fasten themselves against the walls. Their motion in the air is rather a desultory fluttering, than flying, which they execute very awkwardly. With difficulty they raise themselves from the earth, and never fly to any great height: They quicken, relax, or direct their flight, in a manner the most bungling and imperfect. Their flight is neither rapid nor direct, but consists of quick vibrations, in an oblique and winding direction. They sail not, however, in passing, to seize flies, gnats, and particularly

ticularly moths, which fly during the night only. These they swallow almost entire; and we find, in their excrements, portions of wings and other dry and indigestible parts of moths. Having one day descended into the caverns of Arey, to examine the stalactites, I was surprised to find, in a place covered with alabaster, and so dark and profound, a kind of earth which was totally different: It was a thick mass, several feet in extent, of a blackish matter, almost entirely composed of fragments of the wings and legs of flies and moths, as if immense numbers of these insects had assembled in order to die and corrupt together. This, however, was nothing else but the dung of bats, probably amassed during many years in a favourite part of these subterranean caverns; for, through the whole of these caverns, which extend above half a quarter of a league, I saw no other collection of this matter; and I imagined that the bats had fixed upon this place for their common abode; because it was reached by a glimmering light from an aperture in the rock, and that they chose not to go farther, lest they should be lost in a darkness too profound.

Bats are real quadrupeds: Except the faculty of flying, they have nothing in common with birds. But, as the action of flying implies great strength in the upper and anterior parts of the body, the bats have their pectoral muscles much stronger and more fleshy than those of quadrupeds; and in this they have an affinity to

the birds. They differ from birds, however, in every other part of their structure, both external and internal: The lungs, the heart, the organs of generation, and all the other viscera, are similar to those of quadrupeds, except the penis, which is pendulous and loose, a thing peculiar to man, the monkeys, and the bats. Like the quadrupeds, the bats are viviparous, and have teeth and paps. It is said that they bring forth but two at a time, and that they suckle their young, and even carry them when flying. In summer they copulate and bring forth; for they are in a torpid state during winter. Some cover themselves with their wings as with a mantle, and suspend themselves by the hind feet to the vaults of subterraneous caverns; others stick fast to old walls, or retire into holes. Wherever they take up their winter abode, they always assemble in such numbers as to secure them against the effects of cold. They pass the winter without food or motion, never awake till the spring, and again retire at the end of autumn. They support hunger better than cold: Though carnivorous animals, they can subsist several days without food. When they get into a larder, they fix upon the suspended meat, and eat flesh whether raw or roasted, fresh or corrupted.

Two species of bats only have been described as natives of our climate. Beside these, M. Daubenton has discovered other six, which are equally numerous and common. It is

astonishing, therefore, that they should so long have escaped notice. These species are perfectly distinct, and never associate together.

The first, which is well known, is the common bat, of which we have already given the synonyms.

The second, or long eared *, is likewise known to the naturalist, and is perhaps still more numerous than the common bat. The long-eared bat is much less than the common species; its wings are likewise shorter, and its muzzle smaller and sharper, and its ears of an immoderate size.

The third species, which we shall denominate the *Noctule*, from the Italian word *notula*, was not known, though very common in France, and even more frequent than the two preceding species. This bat is found under the eaves of houses, castles, and churches, and also in the hollows of old trees. It is nearly as large as the common bat. Its ears are broad and short, its hair reddish, and it has a sharp piercing voice, like the sound of a small bell †.

The

* Bat with ears an inch long, thin, and almost pellucid; the body and tail are only one inch and three quarters long. This and all other bats, except the *Ternate* and the *hairy-fur*, have a lesser or internal ear, serving as a valve to close the greater when the animal is asleep; Pennant's *Synops. of Quad.* p. 371.

Vespertilio auritus, naso cretaceo simplici, auriculis duplicatis, capite majorebus; *Linn. Syst.* p. 47.

† The noctule has the nose slightly bilobated; ears small and rounded; on the chin a minute verruca; hair of a red-

dish ash-colour; length to the ramp two inches eight tenths;

tail one inch seven tenths; extent of the wings 13 inches;

Pennant's *Synops. of Quad.* p. 369.

The fourth species we shall call the *Serotine*. It is smaller than the common bat or noctule, and nearly of an equal size with the long-eared bat. But it differs from the latter in having short, pointed ears, blacker wings, and the hair of a deeper brown *.

The fifth species we shall name *Pipistrelle*, from the Italian word *pipistrello*, which likewise signifies a bat. The pipistrelle is not near so large as the common bat, the serotine, the noctule, or even the long-eared kind. It is the smallest and least ugly of all the bats, though the upper lip is turgid, the eyes small and deep sunk, and the front much covered with hair †.

The sixth species I call *Barbastelle*, from the Italian word *barbastello*, which also signifies a bat. This animal is nearly of the same size with the long-eared species: Its ears are as broad, but not near so long. The name *barbastelle* is the bet-

dist ash-colour; length to the ramp two inches eight tenths; tail one inch seven tenths; extent of the wings 13 inches; Pennant's *Synops. of Quad.* p. 369.

* The serotine has a longish nose, and short ears, but broad at the base: The hair on the upper part of the body is brown mixed with ferruginous, and the belly of a paler colour. The length from nose to rump is two inches and a half; Pennant's *Synops. of Quad.* p. 370.

† The pipistrelle has a small nose; the upper lip swells out a little on each side; the ears are broad, and the forehead covered with long hair: The colour of the upper part of the body is a yellowish brown, that of the lower part dusky, and the lips are yellow. It is the least of bats, not one inch and a quarter long to the rump; the extent of the wings, six inches and a half; Pennant's *Synops. of Quad.* p. 370.

ter adapted to it, because it appears to have large whiskers: This, however, is only an appearance occasioned by the turgidness of the cheeks, which form a kind of pudding above the lips. The muzzle is very short, the nose much flattened, and the eyes near the ears*.

Lastly, we shall call the seventh species the *horse-shoe*. The countenance of this animal is remarkably deformed. The most striking feature is a membrane in the shape of a horse-shoe, which surrounds the nose and the upper lip. In France it is very common, and frequents the walls and vaults of old houses. Some of them are larger, and others smaller; but they are otherwise so similar in form, that we consider them as of the same species. But, as I have remarked this difference, without finding any of an intermediate size, I cannot determine whether it is an effect of different ages, or a constant variety in the same species†.

* The barbastelle has a sunk forehead, long broad ears, the lower part of the inner sides touching each other, conceal the face and head, when looked at in front; the nose is short, and the end of it flattened; the cheeks are full; the upper part of the body is of a dusky brown, the lower *ash-coloured* and brown: its length to the rump about two inches, and the extent of the wings ten and a half; Pennant's *Synops. of Lond.* p. 370.

† This bat has a membrane at the end of the nose in form of a horse-shoe; the ears are long, broad at the base, and sharp pointed, inclining backward: It wants the little or internal ear. Colour of the upper part of the body cinereous; of the lower, whitish. There is a greater and less variety; the greater is above three inches and a half long from the nose to the tip of the tail; the extent of its wings above fourteen; Pennant's *Synops. of Lond.* p. 369.

Plate XCH.



BAT.

Plate XCIII.
SMALL HORSE SHOE BAT.



LONG EARED BAT.



Plate XCIV.



NOCTULE.

SEROTINE.

A. B. de S. de S.

Plate XCV.



NOCTULE.

NOCTULE.

A. B. de S. de S.

PLATE XCVI.
HORSE SHOE BAT.



HORSE SHOE BAT.
Suspended by the Feet.