

THE HAMSTER, or GERMAN MARMOT*.

THE hamster is the most famous, as well as the most destructive of all rats. We omitted its history, when treating of the other rats, because at that time we had not an opportunity of seeing and examining the animal. For the knowledge we have now acquired of it, we are obliged to the Marquis de Montmirail and M. de Vaitz, who sent us two live

* Marmot with large rounded ears, and full black eyes. The colour of the head and back is a reddish brown, and that of the cheeks white. Beneath each ear there is a white spot, another on each shoulder, and a third near the hind legs. The breast, upper part of the fore legs, and the belly, are black. The tail is short and almost naked. It has four toes and a fifth claw on the fore feet, and five toes behind. The length of the body is about nine inches, and that of the tail three; Pennant's *Synops. of Quad.* p. 271.

Hamster, Hamster, Cricetus; *Agricola, An. Sabel.* p. 436. *Cypsel.* *Quad.* p. 738. *Rati Syn. Quad.* p. 221. *Skrzeczko, Chomik; Racconigki Polon.* p. 232. *Porcellus frumentarius; Schweinfeld's Theriograph.* p. 118. *Krietsch, Hamster; Krauer, Asstr.* p. 317.

Mus cricetus, cauda mediocri, auriculis rotundatis, corpore sabbus nigro, lateribus rufescentibus, maculis tribus albis; *Linn. Syst. Nat.* p. 32.

Glis ex cinereo fusus in dorso, in ventre niger, maculis tribus ad latera albis; *Brissou, Quad.* p. 117.

hamsters,

hamsters, accompanied with an instructive memoir * concerning their manners and dispositions. We fed one of these animals during several months, in order to examine it attentively, and afterwards dissected it, with a view to compare its internal structure with that of other rats. In its anterior parts, it has a greater resemblance to the water rat than to any other animal. It resembles him still more in the smallness of its eyes and the fineness of its skin. But the tail, instead of being long, is shorter than that of the compagnol or short-tailed mouse, which, as formerly remarked, has a great similarity to the water rat in its internal conformation. The hamster seems to be, with regard to the short-tailed field mouse, what the surmulot, or Norway rat, is to the long-tailed field mouse. All these animals live under ground, and appear to be animated with the same instinct. They have nearly the same manners, and particularly that of collecting magazines of grain in their holes. We shall not, therefore, enlarge so much on the resemblances in figure and dispositions, as upon the differences which distinguish the

* I refer you to a pretty full memoir concerning the hamster which I received from M. de Vaitz, minister of state to the Landgrave of Hesse-Cassel, who, to his brilliant talents for state affairs, joins an ardent desire for the improvement of natural history. — He, at the same time, transmitted to me two of these animals alive, which I shall send you by the first opportunity; *Lettre de M. le Marquis de Montmirail à M. de Buffon, 31 Juillet 1762.*

hamster from all the other rats of which we have formerly treated.

Agricola* is the first writer from whom any genuine information can be derived concerning the hamster; to which Fabricius† added a few facts.

* Hamster, quædam quidam cricetum nominant, existit incandus et mordax, adeo ut si eum eques incaute persequatur, soleat prolixe et os equi appetere, et si prehenderit mordicus tenere. In terra cavernis habitat—pedes habet admodum breves; pilis in dorso color est fere leporis: In ventre niger, in lateribus rufus, sed utrumque latus maculis albis tribus nanctis distinguitur. Suprema capitis pars ut etiam cervix eundem quem dorsum habet colorem. Tempora rufula sunt; guttur et cauda—pili autem sic inhererent cuti ut ex ea difficulter evelli possint—aque ob hanc causam et varietatem pelles ejus fere pretiosæ: Multa frumenti grana in specum coegerit, et uniusque dentibus mandit.—Ager Turingie eorum animalium plenus ob copiam et bonitatem frumenti; *Georg. Agricola, de animalibus subterraneis; Apud Gesner, Hist. Quad. p. 738.*

† Hamster animal est agreste sub terra habitans—color vario, ventre non candido sed potius nigerrimo.—Dentes habet in anterioris oris ima supremæque parte binoi, præcidentes et acutos, molares laxos et amplas, ambas exportando importandoque replet: Ambobus mandit.—Cum terram ethodii, primum anterioribus pedibus (quos talpæ similes habet brevitate sed minus intus) cum retrahit, longius profectus, ore exportat. Cuniculos ad antrum plures agit cubili profunditate, sed admodum angustos.—Antrum intus cuniculi ad capiendæ frumenta.—Mensis tempore grana oris generis frumenti importat.—Terra ante cuniculos erecta non tumuli modo assurgit, et talporum tumuli, sed ut agger dicitur.—Vescitur hoc animal frumento omnis generis, et si domi altius pane ac carabibus. In agro etiam mures venat. Cibus cum caput in pedes priores erigitur.—Quamvis athen exsere exiguum sit, natura tamen est pugnax et temeraria. Luculentum quicquid ore gestat pulsat utroque pede malis solito egit.

facts. But Schwenckfeld* has done more than all the other authors put together. He dissected the hamster, and gave a description of it, which corresponds almost in every article with

egeris, recta hostem invadens, spiritu oris et assultu protervum ac misax.—Nec terretur facile, etiam si viribus impar ei sit quem petit.—Vidi ipse, cum equum assultando naribus corripisset non prius morsum dimississe quam ferro occideretur.—Hamstri pellis maxime durabilis.—In Turingia et Misnia hoc animal frequens, non omnibus tamen in locis, sed in uberriis et fertilissimis. In Lusacia circa Radeburgum, a finis panici effoditur; Mulbergi ad Albim in vinetis reperitur, nam maturis quoque vis vescitur; *Georg. Fabricius, apud Gesner, Hist. Quad. p. 739. & 740.*

* Porcellus frumentarius, Hamster minor paulo cuniculo. Longitudo dodrantalis et palmi unius. Pili in dorso fere leporis est colore. Gula, ventres, et pedes interiores nigra sunt. Rubet in lateribus et circa caudam, quem coloris murini tres digitos longa. Macule albe sub auribus, iuxta rostrum, supra artus et coxas. Pedes admodum breves, digitis et unguliculis albidis quinque utrinque. In pedum plantis, seu parte digitorum inferiore, tubercula veluti calli ubique eminent. Oculi splendidi, nigri, elegantes. Dentes habet ut lepus anteriores binoi incisores et laterales. Lingua mollis spongiosa. E bucculis vesiculæ utrinque amplæ membranæ sub cute porriguntur, quæ sensim graciliter dorsi tenaci ligamento alligantur. Has inter sacci mellis tempore grani tristici, filiginis, et alii flos folles quospiam infascat, atque in suos cuniculos comestum in futuram hyemem coegerit ac reponit.

Palmostibus candidis quatuor sunt lobis.

Cum remibus paulo majus mucrone obtusiore. Hepar triplicatum apparet, unum super alterum impositum. Inferior pars dorsi adspiciens duos obtinet lobulos. Media, quæ maxima, integra absque incisuris integrum abdomen secundum latitudinem occupans ventriculorum ex parte amplectitur. Superior portio divisa alio incumbens diaphragmati proxime subjacet. Pel nullum conspiciere licuit.

with ours; yet he is hardly quoted by our more modern naturalists, who content themselves with copying Gesner. In justice to this author, we have inserted his remarks entire; and, when to these we add the observations of M. de Waite, the history of this animal will be complete.

' The habitations of the hamster are differently constructed, according to their sex, age, and the quality of the ground. The house of the male has an oblique passage, at the mouth of which there is a considerable heap of earth. At a distance from this oblique passage, there is a hole which descends perpen-

Ventriculus ei duplex. Unus candidus rotundiusculus, cui sterper isthmum annectitur longiusculus, sinistrum hypochondrium occupans, hinc prope isthmum œsophagus inferitur, alteri sui dextro hypochondrio intestina adhærent. In utroque reperitur chylus candidus, pelliculæ farinaceæ similis, crassior tamen in sinistro.

Intestina gracilia flavescent; ubi desinunt, incipit cæcum asfractuosum amplum, hinc crassiora ad cæruleum vergunt colorem. Exermit pilulas longiusculas instar murium. Lien coloris sanguinei solem fere humanam præsentat.

Reines bini phascoli magnitudine et figura. Vesicula candida pilam italicum æquat, rotunda lagenulæ instar.

Parit quinque sexue, uno partu.

In terræ cavernis habitat, agri vallator et Cereis hostis. Autumnus multa frumenti grana in speciem congerit, et utrinque destibus mandit.

Admodum pinguefcit; ob id porcellis Indiciæ non inepte comparatur.

In cibum non recipitur; sed pelles consuntur ad vestimenta.

De caverna sua aqua fervente seu frigida copiose infusa expellitur.

' dicularly

' dicularly into the chambers of the lodging.
' No earth appears near this hole; which renders it probable that the oblique passage is dug from without, and that the perpendicular hole is begun from below, and continued upward.

' The house of the female has likewise an oblique passage, and, at the same time, two, three, and not unfrequently eight perpendicular holes, in order to allow her young to go out and in at pleasure. The male and female have each a different dwelling, and the female makes her's deeper than the male.

' At the distance of a foot or two on each side of the perpendicular holes, the hamsters of both sexes, according to their age, and their number of young, dig one, two, three, and sometimes four cavities in the form of vaults, both above and below, which are more or less capacious in proportion to the quantity of their provisions.

' The perpendicular hole is the common passage: The oblique one is made for the purpose of carrying out the earth. As the declivity of this oblique passage is more gentle in one cavity than in another, it may likewise promote a circulation of air in those subterraneous habitations. In the cavern where the female brings forth her young, there is no magazine of grain, but a nest of straw and herbs. The depth of the caverns is various: A young hamster, in the first year, makes his cavern not

above a foot deep; but the old ones frequently dig to the depth of four or five feet. The whole habitation, including the passages and caverns, is sometimes from eight to ten feet in diameter.

These animals provide their magazines with dry clean grain, corn in the ear, peas, and beans, in their pods, and afterwards carry out the husks and pods by the oblique passages. In transporting their provision, they use the pouches in their cheeks, each of which will hold a quarter of an English pint.

The hamster begins to lay up provisions about the end of August. When his magazines are filled, he covers them, and carefully shuts up all the avenues with earth, which prevents his retreat from being easily discovered, and it is only to be recognised by the heap of earth near the oblique passage mentioned above; after which, the perpendicular holes must be investigated. The most common method of seizing these animals is to dig them out, which is a laborious task, on account of the extent and depth of their holes. A person, however, who accustoms himself to this species of hunting, fails not to profit by it; for, in autumn, which is the proper season, he generally finds in each habitation, beside the fur of the animal, two bushels of good grain. The hamsters produce twice or thrice in a year, and bring forth five or six, and often more,

at each litter. In some years they appear in prodigious numbers, and, in others, hardly any of them are to be seen. It is in moist years that they multiply so greatly; and this numerous multiplication occasions a dearth, by the general devastation they make among the corn.

At the age of six weeks or two months, the hamsters begin to dig their habitations; but they neither couple nor produce during the first year.

The polecats destroy great numbers of the hamsters, and take possession of their holes.

The hamsters are commonly brown on the back, and white on the belly. Some of them, however, are gray; and this difference may be the effect of advanced age. Some of them are also totally black.

Like the mullet, or long-tailed field mouse, the hamsters mutually destroy each other. Of two kept in a cage, the female killed the male in one night, and, after cutting the muscles which fix the jaws to each other, devoured a part of the intestines. They produce several times in the year, and are so destructive, that, in the states of Germany, a price is set upon their heads. They are so numerous in that part of the Continent, that their fur is a considerable article of commerce.

All these facts, which we have extracted from the memoir of M. Waitz, and the remarks of

of M. de Montmirail, appear to be certain, and correspond with our other sources of information concerning the hamsters. But it is not equally certain, as mentioned in the same memoir, that they remain in a torpid state during the winter, and revive in the spring. The hamster which we kept last winter (1762-3) in an apartment without fire, and where the cold frequently congealed water, never became torpid, but moved about and eat its ordinary food. But several kinds of dormice, which were likewise in our possession, became torpid in a much smaller degree of cold. Hence the hamster neither approaches the dormice nor marmot by this character; and some of our naturalists have improperly called it the *marmot of Strasbourg*, though it sleeps not like the marmot, nor is found in the neighbourhood of Strasbourg.

S U P P L E M E N T.

IN the *Gazette de Littérature*, of the 13th of September 1774, we find the following observations concerning the hamster, extracted from a German publication by M. Sulzer.

‘ The corn-rat, in German *hamster*, cannot be more commodiously described than at Gotha, where, in one year, 11574 skins of it, in another,

‘ ther, 54429, and, in a third, 80,139, have been brought to the town-house. In general, this animal inhabits temperate countries. When irritated, its heart beats 180 times in a minute. The weight of the body is to that of the brain as 1 to 193.

‘ These animals lay up magazines which often consist of twelve pounds of grain. In winter, the female sinks very deep in the earth. The male is a bold animal, and defends himself against dogs, cats, and men. He is naturally quarrelsome, agrees not with his own species, and sometimes, in a transport of fury, slays his own family. He devours the feeble individuals of his species, as well as mice and birds; and yet he feeds upon all kinds of herbs, fruits, and seeds. He drinks little; and the female remains longer in her winter retreat than the male. The former goes four weeks with young, and often produces six at a litter. In a few months, the females become fertile. The rat called *Illis** kills the hamster.

‘ When this animal is in a torpid state, neither respiration, nor any kind of feeling, can be perceived. The heart, however, beats fifteen times in a minute, which is discovered by opening the chest. The blood continues to be fluid, and the intestines are not irritable. Even

* The *Illis* is the polecat, and not a rat, as this author alleges.

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‘an electrical shock does not awake him: In the open air, he is never reduced to a torpid state.’

M. Sulzer mentions the gradual manner in which this animal recovers his vigour and activity.

‘The utility of the hamster is confined to the destruction of mice; but he himself is much more mischievous*.’

We wish that M. Sulzer had marked the precise degree of cold, or want of air, which renders these animals torpid; for we still maintain, what was formerly remarked, that a hamster confined in a cage, and in a room where water froze, was not reduced to a torpid state during the winter 1763. This fact will receive additional confirmation from the following observations of M. Allamand, which he has published at the end of the Dutch edition of my work,

Addition to the History of the HAMSTER,
by M. ALLAMAND.

THE hamster is a quadruped of the mouse kind, which sleeps during the winter, like the marmots. The legs and neck are short; the head is thickish; and the mouth is garnished

* *Observat. sur le Rat de Blé*, par M. Sulzer; *Gazette de Littérature*, 13 Sept. 1774.

on each side with whiskers. The ears are large and almost naked. The tail is short, and one half of it naked. The eyes are round and prominent. The colour of the hair is a mixture of red, yellow, white, and black. These characters exhibit not the most alluring picture; and the manners of the animal are still more disgusting. He has no love but for himself, and possesses not a single social quality. He attacks and devours every animal he is capable of conquering, not excepting his own species. Even the instinct which draws him to the other sex, lasts only a few hours; at the end of which the female would not meet with a better fate, if she did not take the precaution of avoiding, or of killing him first. To these odious qualities, however, Nature has joined others, which, without rendering him more amiable, make him deserve a distinguished rank in the history of animals. He belongs to the small number of those which pass the winter in a torpid state, and he is the only European animal that is provided with cheek-pouches. His address in making a subterraneous abode, and the industry with which he lays up provisions, merit the attention of the curious.

The hamster inhabits not all soils or climates indifferently. He is neither found in very warm nor in very cold countries. As he lives upon grains, and dwells under the earth, stony, sandy,

or argillaceous soils are as inconvenient to him as meadows, forests, and marshy grounds. He requires a soil which is easily pierced, and yet so tenacious as not to tumble down. He likewise chooses countries which abound in all kinds of grain, that he may not be obliged to seek his food at great distances, for which he is not well qualified. In Thuringia, the soil of which possesses all these qualities, the hamsters are more numerous than in any other country.

The habitation which the hamster digs to the depth of three or four feet, consists of more or fewer apartments, according to the age of the animal. The principal chamber is lined with straw, and serves him for a lodging. The others are destined for the preservation of provisions, of which he amasses great quantities during the autumn. Each hole has two apertures; the one descends obliquely, and the other, through which the animal goes out and in, is perpendicular.

The holes of the females, who never live with the males, are somewhat different. In those where she brings forth, there is seldom above one chamber for provisions; because the short time the young remain with her requires not a great store of food. But, instead of one perpendicular hole, she makes seven or eight, to give free passage to her young. Sometimes the mother banishes her offspring, and continues to possess this hole; but she commonly digs another,
and

and lays up as much provisions as the season permits her to collect.

The hamsters copulate about the end of April, when the males enter the apartments of the females, where they remain only a few days. If two males happen to meet in the same hole, a furious combat ensues, which generally terminates in the death of the weakest. The conqueror takes possession of the female, and both, though at every other period they persecute and kill each other, lay aside their natural ferocity during the few days their amours continue. They even mutually defend each other against aggressors. When a hole is opened at this period, and the female perceives that her husband is about to be carried off, she darts upon the ravisher, and makes him feel the fury of her vengeance, by inflicting deep and painful wounds.

The females bring forth twice or thrice every year. Their litter is never fewer than six, and oftener from sixteen to eighteen. The growth of these animals is very rapid. At the age of fifteen days, they already begin to dig the earth. Soon after, the mother banishes them from her habitation; so that, at the age of about three weeks, they are abandoned to their own management. The mother, in general, discovers little tenderness for her offspring. She who, in the season of love, defends her husband with courage, flies in the most dastardly manner when her family is threatened with danger. Her only solicitude

solicitude is to provide for her own safety. With this view, when pursued, she digs deeper into the earth, which she performs with an amazing quickness. The young would willingly follow her; but she is deaf to their cries, and even shuts the hole which she had made.

The hamster feeds upon all kinds of herbs, roots, and grains, which the different seasons produce. He even eats the flesh of such animals as he can conquer. As he is not adapted for long journeys, his magazine is first stocked with the provisions which are nearest his abode. This is the reason why some of his chambers are frequently filled with one kind of grain only. When the harvest is reaped, he goes to a greater distance in quest of provisions, and carries every article he can find, without distinction, to his granary. To facilitate the transportation of his food, Nature has furnished him with two pouches in the inside of each cheek. On the outside, these pouches are membranous, smooth, and shining; and, in the inside, there are a great many glands, which continually secrete a certain fluid, to preserve their flexibility, and to enable them to resist any accidents which may be occasioned by the roughness or sharpness of particular grains. Each of these cheeks is capable of containing an ounce and a half of grain, which, on his return to his habitation, he empties, by pressing his two fore feet against his cheeks. When we meet a hamster having his cheeks filled

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with provisions, it is easy to seize him with the hand, without the risk of being bitten; because, in this condition, he has not the free motion of his jaws. But, if he is allowed a little time, he soon empties his pouches, and stands upon his defence. The quantity of provisions found in the holes depends on the age and sex of the inhabitant. The old hamsters often amass a hundred pounds of grain; but the young and the females content themselves with a quantity much smaller. Their object in laying up provisions is not to nourish them during the winter, which they pass in sleep and without eating, but to support them after they awake in the spring, and previous to their falling into a torpid state.

At the approach of winter, the hamsters retire into their subterraneous abodes; the entry to which they shut up with great address. There they remain in perfect tranquillity, and feed on their provisions, till the frost becomes severe, when they sink into a torpid state, which resembles a profound sleep. When, during this period, the holes are opened, which we know by a small eminence of earth raised near the oblique passage formerly described, we find the hamster lying upon a bed of soft straw. His head is bended under his belly, between the two fore legs, and those behind rest upon his muzzle. The eyes are shut; and, when the eye-lids are forced open, they instantly close again. The members are stiff, like those of a dead animal,

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and the whole body feels as cold as ice. Neither respiration nor any other sign of life can be perceived. When dissected in this situation, we see the heart alternately contracting and dilating. But this movement is so slow, that the pulsations exceed not fifteen in a minute; though, when the animal is awake, the heart beats a hundred and fifty strokes during the same time. The fat has the appearance of being coagulated. The intestines are as cold as the external parts of the body, and discover not the smallest irritability upon the application of spirit of wine or oil of vitriol. During this operation, the animal seems to feel very little. He sometimes opens his mouth, as if he wanted to respire. But his lethargy is too strong to admit of his wakening entirely.

The lethargy of the hamster has been ascribed solely to a certain degree of cold: This may be true with regard to the dormice and bats. But experience proves, that, in order to render the hamster torpid, he must also be excluded from all communication with the external air: For, when a hamster is shut up in a cage filled with earth and straw, and exposed in winter to a degree of cold sufficient to freeze water, he never becomes torpid. But, when the cage is sunk four or five feet under ground, and well secured against the access of air, at the end of eight or ten days he is equally torpid as if he had been in his own burrow. If the cage is brought up

to the surface, the hamster will awake in a few hours, and resume his torpid state when put below the earth. This experiment may be repeated with the same success, as long as the frost continues. We have a farther proof that the absence of the air is one of the causes of torpidness in the hamster: When brought up from his hole, in the coldest weather, and exposed to the air, he infallibly awakes in a few hours. This experiment succeeds equally either in the night or day, which proves that the light forms no part of the cause.

It is curious to observe the hamster passing from a torpid to an active state. He first loses the rigidity of his members, and then makes a profound respiration, but at long intervals. His legs begin to move, he opens his mouth, and utters disagreeable and rattling sounds. After continuing these operations for some time, he opens his eyes, and endeavours to raise himself on his legs. But all these movements are still reeling and unsteady, like those of a man intoxicated with liquor. He, however, reiterates his efforts, till he is enabled to stand on his legs. In this attitude he remains fixed; as if he meant to reconnoitre, and repose himself after his fatigues. But he gradually begins to walk, to eat, and to act in his usual manner. This passage, from a torpid to an active state, requires more or less time, according to the temperature of the air. When exposed to a cold air, he sometimes

requires more than two hours to awake, and, in a more temperate air, he accomplishes his purpose in less than one hour. It is probable that this change is produced imperceptibly, when the animal is in his hole, and that he feels none of the inconveniencies which arise from a sudden and forced reviviscence.

The life of a hamster is divided between the necessary cares of satisfying his natural appetites, and the fury of combating. He seems to have no other passion but that of rage, which induces him to attack every animal that comes in his way, without attending to the superior strength of the enemy. Ignorant of the art of saving himself by flight, rather than yield, he allows himself to be beat to pieces with a stick. If he seizes a man's hand, he must be killed before he quits his hold. The magnitude of the horse terrifies him as little as the address of the dog, which last is fond of hunting him. When the hamster perceives the dog at a distance, he begins with emptying his cheek-pouches, if they happen to be filled with grain. He then blows them up so prodigiously, that the size of the head and neck greatly exceeds that of the rest of the body. In fine, he raises himself on his hind legs, and, in this attitude, darts upon the enemy. If he catches hold, he never quits it but with the loss of his life. But the dog generally seizes him behind, and strangles him. This ferocious temper prevents the hamster from being at peace

Plate CCXXIII.



HAMSTER.

peace with any other animal. He even makes war against his own species, not excepting the females. When two hamsters rencounter, they never fail to attack each other, and the stronger always devours the weaker. A combat between a male and a female commonly lasts longer than between two males. They begin by pursuing and biting each other; then each of them retires to a side, as if to take breath; a little after, they renew the combat, and continue to fly and to fight till one of them falls. The vanquished uniformly serves for a repast to the conqueror.