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*Quid dem? Quid non dem? Renuis quod tu, jubet, alter?
Quod petis id sane est invisum ac idumque duobus.*

Horat.

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When the Scieh of the Dervises dies his eldest son succeeds him in his dignity, that is to say to that place which his father enjoyed. With regard to the other sons they are free to lead the same kind of life as their fathers.

These monks make a vow of poverty, and when charity is given them,

they never receive it with the open hand; whatever is offered them, they take hold of it with the thumb, which they afterwards keep closely squeezed against their fingers. They never say I thank you, but only *Evallah*, that is to say, *may it be well for God*.

MEMOIR ON THE REGENERATION OF CERTAIN PARTS OF THE BODIES OF FISHES.

BY MR. BROUSSONET.

IN certain classes of animals we observe some parts susceptible of motion, which reproduce themselves after they have been destroyed; but this reproductive power is much less sensible in animated beings, the organization of which is more perfect, than in those the organization of which being less complicated, seems rather to approach that of vegetables.

Among all the experiments which have been made to prove the possibility of the regeneration of different parts of the same animal, there are some, without doubt, which we are warranted to distrust; and it has happened more than once, perhaps, that when we have imagined that we divided the same individual into distinct portions, we divided only a habitation common to several, which remaining entire in each portion, have renewed their habitation. Numerous observations, however, leave us in no doubt respecting the reproduction of certain organs in marine animals, in earth-worms, in snails, and in a great number of other species of the same families. The parts even which we consider as essential to life, such as the head, grow up on those ani-

mals after having been cut off. This phenomenon appears very surprising on the first view, because numerous examples have taught us to consider that organ as absolutely necessary to the existence of animals, though experience teaches us, that it is less essential in proportion as their organization is less perfect. The tortoise, the different parts of which, in their structure, exhibit less perfection than those of animals the blood of which is warm, lives almost two months after its head has been cut off.

The parts which present examples of this kind of regeneration are in the greater part of animals soft, of a homogeneous substance, and almost like that of the rest of the body. They reproduce themselves almost as the nails, horns, &c. in animals which have warm blood; a circumstance which ought to make us consider as something extraordinary, the new formation of parts composed of substances hard and soft, and formed of several articulations.

This regeneration of articulate parts has been observed in animals of two different orders. Some, such as cray-

“ went to the *fauxbourgs Santair*, to see the religious ceremonies of the Dervises, called
“ *Rufai*. They began their exercise by turning round, and singing in each other's ears,
“ after which they agitated their bodies with different motions, and in a most violent
“ manner, repeating the words *illah, hou, hou*. After four hours spent in this manner,
“ they became as it were frantic, a situation which appeared to me not to be altogether
“ counterfeited. Some threw themselves on the ground, and knocked their heads
“ against the walls, others foamed at the mouth, fell into convulsions, and cried out, that
“ they saw the prophet. At last they brought spikes of red hot iron, upon which the
“ most fervent threw themselves before our eyes, whilst others held them in their mouths
“ until they became cool. The ceremony concluded with some miracles, which the
“ superior performed by touching the sick and the lame.”

fishes,

fish, have their skeleton on the outside, that is to say, their soft parts are covered with a hard substance. In others, on the contrary, such as the lizard, the salamander, &c. the skeleton is in the inside, that is to say, the bony part is covered by the parts that are soft.

It is well known that cray-fish, the parts of which are joined to the body by very delicate articulations, are liable to lose them, but that new ones grow up at the end of some weeks.

The reproduction of the paws of salamanders has been traced with the greatest minuteness, by two of the most distinguished observers of the present age, Mr. Bonnet of Geneva, and Mr. Spallanzani. We are indebted to these gentlemen for a number of discoveries in one of the most curious points of physiology. The regeneration, however, of articulate parts, has not been much examined in fishes, a kind of animals very different from those which have been already observed, and of which the blood is never above two or three degrees warmer than the element they inhabit.

I have cut certain portions from the fins of different fishes, and having repeated this experiment at various epochs, I have always found that these parts reproduced themselves nearly. It appeared to me, that they grow up quicker in fishes that are young, and in some species rather than in others.

Having cut away part of the fins of some gold fish, I observed the third day on the edge which had been cut, a kind of whitish excrescence; on the eighth this excrescence was sensibly extended, and it soon became a membrane, which at first was only a line in breadth. This membrane was thicker than that which formed the bottom part of the fin, but in proportion, as it extended itself, it became thinner, and transparent. At the end of three months I could distinguish the formation of the bony ribs, destined to support this membrane. They appeared to be a continuation of the gristles of the base. They at first seemed to be of a substance like jelly.

Having cut the right fin of the breast of a gold fish, in the space of eight months that part became as large as the left, which I had not touched. I repeated this operation on the fins of the belly, and the result was always the same. It is true that though the new fins were as large as the old, they remained some time white, and less transparent than the rest.

I made oblique sections transversely, and, in a word, in every direction, in the tail fin of different fishes, and the parts cut always regenerated at the end of a certain time. Fishes subjected to these experiments lost their equilibrium, and their progressive faculty became less in proportion as I cut their fins. They never recovered their natural position until these parts were renewed.

From some fishes I cut off the fins as near to the body as possible; these animals were then unable to keep themselves horizontally in the water. Their heads inclined to the bottom of the vessel; they wavered, and could not, but with great exertion, resume an horizontal position. Their fins grew up very slowly.

The same experiments having been repeated on several fishes, I always observed the same effects. In a carp, which had the edges of its fins gnawed by small fishes, in such a manner, that they appeared to be fringed, I perceived, at the end of some months, that the edges were become perfectly smooth.

I remarked that the fins were renewed generally sooner or later, according as they were more or less useful to the animal. Mr. Spallanzani made a similar observation on earth worms, the heads of which were constantly reproduced sooner than the posterior part of the body; in the like manner, in fishes, the tail fin, the most useful of all, since it enables them to execute almost all their motions, was always formed sooner than those of the belly or the breast; and those which are destined to support the fish at an equal height, and to aid it in its lateral motions, were renewed much sooner than those of the

the back, in which I could scarcely distinguish the new cartilages seven months after they had been cut.

The membrane which formed the first rudiments of the fin, had different degrees of thickness, according to the different kinds of fishes. It was composed of two leaves, between which were the gristles, composed sometimes of one piece, hard and sharp, but more frequently of several bony parts, closely united by a cartilaginous substance. That the fins may be reproduced, part of the cartilages must be left. If this part be entirely destroyed, new fins will not grow up in the room of the old ones. This I have often observed in several fishes, the dorsal fins of which, with part of the back, had been taken away, and in the room of which there was formed a plain future.

Though fish cannot well dispense with these organs, they are able in some measure to supply what is wanting by those which are left. I have seen very large fish live several years, though deprived of the half of their bodies, that is to say, of that part which extends from the anus to the tail.

The wings of birds have been compared to the fins of fish, and the feathers to the cartilages of the latter; but there is a very great difference in these organs, in respect to the manner in which they are reproduced; we know that the feathers never grow up after they have been cut.

In almost all fish, the cartilages of the fins and tail are very strong and numerous. If we compare the number of these bony substances with that of the bones of the paws of a salamander, we shall find that it is much superior. There is, indeed, a very great difference between these organs, especially respecting the manner in which the different hard parts are connected with one another.

If the membrane which forms the fins has been torn, according to the direction of the cartilages, the two parts will unite, and form a kind of future, which disappears by degrees. Fishes are often found which have several of these futures in their fins, especially in those of the back.

This regenerating faculty of the fins is so much the more useful to fishes, as these parts are continually exposed to be torn or cut either by different bodies being dashed against them, or by the teeth of animals. Their increase, however, appeared to me to be always very slow, but there is every reason to believe that it is much quicker in those fish which are in a state of liberty.

My intention, in these few observations, has been to present a fact, which, in my opinion, may be of some use to physiology, and to offer a new proof of the multiplicity of the resources of nature, when it may be necessary to restore to organised bodies that original state of perfection which they have been deprived of by secondary causes.

A SHORT ACCOUNT OF MOLA DI GAETA.

MOLA DI GAETA is a small town of Italy, in the kingdom of Naples, situated on the sea, in the Terra-di-Lavoro, and built on the ruins of the ancient Formiæ. Horace compliments *Ælius Lamia* on his being descended from the first founder of this city :

Auctore ab illo ducis originem,
Qui Formiarum mœnia dicitur,
Princeps ———.
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The same poet compares the wines made from the grapes of the Formian hills, with Falernian :

Mea nec Falernæ,
Temperant vites, neque Formiani
Pocula colles.

The happy situation of this country, and the mildness of its climate, induced many of the Romans in the flourishing times of the republic to
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erect a great number of country houses in it, the ruins of which may still be seen every where around. Cicero had a villa near this place, and it was on this coast where that great orator was murdered in his litter, as he was endeavouring to make his escape to Greece. Formiæ remained long populous, and in the ninth century, it was an episcopal see, but having been destroyed by the Saracens, the see was transferred to Gaeta itself, which is situated towards the point of the gulph.

The fortress of Gaeta is built on a promontory, at the distance of about three miles from Mola; but travellers, who are desirous of visiting the former, generally cross the gulph, which lies between them; and immediately, as the most remarkable thing, they are shewn a large cleft in a rock, which, it is said, was miraculously split in that manner at the death of our Saviour. To put this assertion beyond doubt, something like the impression of a man's hand on the rock is shewn at the same time, of which the following account is given: A certain person having been informed

on what occasion the rent took place, struck the palm of his hand on the marble, declaring he could no more believe the story told him, than that his hand would leave its mark on the rock; on which, to the great confusion of this infidel, the stone yielded like wax, and the impression still remains, as a warning to unbelievers.

This rock is much resorted to by pilgrims, and many vessels often touch here, that the seamen may be provided with little pieces of marble, which they earnestly request to be procured as near the fissure as possible. These they wear always in their pockets, persuaded, that in case of shipwreck they will be more efficacious in preserving them from drowning than a cork jacket. Some of these superstitious people, however, have the misfortune to be drowned, but this does not prevent the marble from preserving its reputation. In the castle strangers are shewn, among other curiosities, the skeleton of the famous Bourbon, Constable of France, who was killed in the service of the Emperor Charles V. while he was scaling the walls of Rome.

OBSERVATIONS ON THE ANIMAL AND VEGETABLE POISONS OF THE SOUTHERN PARTS OF AFRICA.

FROM PATERSON'S TRAVELS.

OF the reptiles of Africa, the most poisonous is the horned snake; it is of a greyish color, and about eighteen inches long: its head, which is very flat, is large in proportion to the size of the body, with small scales, which the inhabitants call horns, rising over its eyes.

This serpent, so truly formidable from the mortal nature of its bite, particularly abounds in the country of the Boshmen and Nimiqua Hottentots, who use its poison, in preference to that of all others, for poisoning their arrows. The Boshmen, indeed, who have no cattle of their own, and depend entirely on their bows for subsistence, seem to have been furnished

by nature with this poison as their only defence against their numerous enemies. Impelled by hunger, they often quit the mountains and plunder the Dutch peasants of their cattle; and were it not for these poisonous weapons they would be unable to withstand or escape from the parties which in these cases are sent against them; but thus armed, several of the Dutch have been killed, and many have barely escaped with life from their wounds.

The usual mode of preparing this poison, is by bruising the whole snake till it becomes of the consistence of a gum. A small quantity of this substance is then tied on the point of the arrow