

HERPETOLOGICAL GATHERINGS PART 3

A question to physiologists

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A MOTIVE: EXODUS 4: 3-4 AND 7: 9-12

4: 3-4 *And the Lord said unto him, What is that in thine hand? And he said, a rod. And he said, Cast it on the ground. And he cast it on the ground, and it became a serpent; and Moses fled from before it. And the Lord said unto Moses, Put forth thine hand, and take it by the tail. And he put forth his hand, and caught it, and it became a rod in his hand.*

7: 9-12 *When Pharaoh shall speak unto you, saying, Shew a miracle for you: then thou shalt say unto Aaron, Take thy rod, and cast it before Pharaoh, and it shall become a serpent. And Moses and Aaron went in unto Pharaoh, and they did so as the Lord had commanded: and Aaron cast down his rod before Pharaoh, and before his servants, and it became a serpent. Then Pharaoh also called his wise men and the sorcerers: now the magicians of Egypt, they also did in like manner with their enchantments. For they cast down ever man his rod, and they became serpents: but Aaron's rod swallowed up their rods.*

INTRODUCTION

The Bible tells quite a few stories which are not yet scientifically explained and can be characterized as miracles. The above quoted sentences from Exodus belonged in my opinion until recently to this category of miracles. Until I read a small splendid book by Zimniok (Van der Voort, 1992). There I was astonished to read that Berbers near the Moroccan city of Marrakesch still show this trick to amuse tourists and rich people.

NO MIRACLE

Zimniok describes how snake-charmers manipulate cobras that still have their fangs. Some helpers are essential for his trick. These men distract the snake's attention, while one of them approaches it from behind, grabs it, caresses/strokes it a few times and finally presses its neck on a certain spot. The snake will then stiffen immediately and change into a staff

in the hand of the snake-charmer. This catalepsis will continue a while, after which the man will throw away the snake. Then the snake will revive and show its characteristic threat behavior (Zimniok, 1984, page 95).

The extensive list of literature in Zimniok's book drew my attention to other interesting herpetological books, among others, works by Hans Egli and Louis Keimer. These authors also describe biblical scenes with snakes. Keimer especially gives an almost unending series of examples of snake-charmers; he also describes this strange kind of catalepsis, and I was astonished never having read it ever before.

Both Egli and Keimer write that cobras can get as stiff as a staff, without explaining this phenomenon. And this trick by snake-charmers is very ancient. It is not only mentioned in the Bible, it is also pictured on Egyptian scarabees from the period of Hyksos (17th century b.c.)

About three millennia later Prosper Alpinus (1553-1617), a doctor in service of the Venetian consul in Cairo, describes the cobra trick:

After they tempered their rage, they quickly push their finger on the tip of the snake's nose, after which the animal drops as if it were dead to earth. Then the snake can be picked up by hand. The snake stays in this sleepy condition, sometimes even a whole day long. To wake her one has to squeeze her firmly in its tail and rub the tail until the snake awakes. At that moment the snake will show its old rage again. (Egli, 1982, page 51; Keimer, 1947, page 41).

Zimniok's observations differ in some way. Zimniok speaks of a certain spot in the neck, where Alpinus mentions the tip of the nose. And according to Zimniok the snake will awake out of its catalepsis by itself, whereas Alpinus writes that the snakes consciousness can last up to one day and that one has to manipulate the snake to free it from its stiffness. Reports of tricks with cataleptic snakes continue. Keimer gives a chronological account, starting at Alpinus, who lived in Egypt from 1581 until 1584, up to May 21st 1947, the year in which Keimer published his book.

SALIVA

The process of stiffening usually goes as described above. But there are some interesting variations. Some of them I would like to describe.

In a Dutch medieval book, namely *Der Naturen Bloeme* by Maerlant, I read about the classical idea (which was already described by Plinius) that the saliva of a sober man is venomous to snakes (Plinius XXXVIII, 35; Van der Voort, 1989, page 114). Because Maerlant only translates and puts on rhyme what he reads, every kind of comment on these curious kind of phenomenons is omitted. Reading Keimer, one will notice that what Maerlant put in his bestiarium in 1266 is still being practiced all these centuries afterwards. During 1798-1801 someone called De Chabrol de Volvic stayed in Egypt. He gives a description of one of the many manipulations with snakes. One of his stories:

A man shows a large snake which he starts to irritate so much, that it feels the urge to attack him. The man however spits into the snake's mouth, after which its rage suddenly disappears; the snake stayed almost motionless (Keimer, 1947, page 51).

The author does not mention supplementary tricks concerning the snake's head; just the saliva is enough to calm down the snake.

All these manipulations are generally performed with *Naja haje*, though it is also possible to do these tricks with colubrids. Another world traveller, Maxime du Camp, tells the following story about a young snake charmer:

The child took the colubrid, wound it round his body, approached it with his lips and let it disappear in a slow way between his clothes and naked skin. He spit into her mouth, pushed firmly with his thumb on the head of the innocent reptile, upon which the snake immediately became stiff like a staff.

It is curious that the snake stiffens when it is still between the boy's clothes. But the description of Du Camp may be careless. Again, the combination of saliva and pressure on the snake's head is mentioned. The authority which is quoted by Keimer adds to this description the explanation of a cataleptic process, which is in my opinion not a real explanation:

This result, that may astonish, is as you know very easy to achieve. It is sufficient to press the snake's head firmly in order to give her a cataleptic attack which stiffens her in such a way that it might be easier to break her than to fold her. (Keimer, 1947, page 65).

An interesting variant gives the following description from 1856. In this fragment a snake charmer shows his tricks with three snakes. He had already allowed two of them to bite him; after this bite he wound them around his body:

He took the third animal in his hand, opened its mouth, spit into her throat, laid his hand in such a commanding way on the snake's head that the snake immediately became stiff like a staff and could be handled like a staff. (...) After a few minutes the magician took the snake by its tail, which he rolled between his hands. Doing this, the snake very soon became as lively as before. (Keimer, 1947, page 66).

This kind of snake charming shows another variety: saliva is combined with a commanding hand. Notice that this is not the same as pressing the snake's head!

The famous biologist Brehm spent a few years from 1847 on in Egypt and he also gives a remarkable eye witness story of an astonishing snake stiffening. This time no saliva was needed. Neither was it necessary to press the head of the animal. It was sufficient to sprinkle a *Naja haje*, whose teeth had been drawn, with a little water to make her stiffen completely. Brehm's explanation: a snake will contract its muscles as soon it is sprinkled with water or as soon one presses certain body parts (Keimer, 1947, page 62).

However, Brehm's explanation cannot be right, as can be seen in terrariums every day. For instance, if I sprinkle my terrarium in order to help the snake's sloughing, this will never lead to stiffness of any of my animals. On the contrary, my *Elaphe taeniura friesei* hate to be sprinkled and move like hell through the terrarium. That is just the opposite of stiffness!

A QUESTION TO PHYSIOLOGISTS

After reading Zimniok, Egli and Keimer, the Bible has one miracle less to me. However, my curiosity is still not satisfied in a proper way.

Observations as written above are made regularly; Keimer gives an enormous amount of them. But there are a number of contradictions in the way the catalepsis is achieved. Often it concerns cobras which are hit on the head or snout, pinched in the neck muscles, pressed on their nose and eventually are spat on in order to get their catalepsis. And I make a passing reference to scorpions, which can also be brought to absolute stiffness by spitting on them (Keimer, page 75).

It seems to be unlikely that all the above acts cause stiffness to snakes. I do not doubt the phenomenon and I would like to see it once with my own eyes, but it seems logical to me that there might be only one spot on a snake's body where total stiffness can be achieved. The question is, how to locate this spot and what is the physiological explanation? And what elements does human saliva contain that can cause a cataleptic effect on snakes.?

After some time, the stiffened snake opens its eyes (how is this possible?), shakes its head as if it awakes from a deep sleep and shows itself to be alert at once.
(Keimer, 1947, page 69).

This is only one version. But as far as the awakening of the snakes is concerned, these versions also differ. Do catalepted cobras become active out of their own or are specific acts needed? And why can pinching the tail neutralise a firm push on the head? Dear physiologists, I am waiting for your answer.

LITERATURE

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