

HISTORICAL PERSPECTIVES

Protective Devices of Snakes: Rattlesnakes¹

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The rattle of the rattlesnake (all members of the genera *Crotalus*, with small scales on the head, and *Sistrurus*, with large plates on the head, are called rattlesnakes) is more or less familiar to every one. Those who have not seen or heard it have surely heard about it. It seems at first thought to be one of the most difficult of developments to understand and explain. However, when we consider the habit, which a vast number of different species of snakes have, of vibrating the tip of the tail when they are excited, together with the fact that the outer horny layer of the skin is shed at frequent intervals, it is not difficult to look back over what have very probably been the steps which led to the formation of the rattle. Many species of snakes, such, for instance, as the bushmaster and the copperhead, have a large horny spine at the end of the tail. It is only necessary to suppose that some ancestor of the rattlesnake in the distant past had such a spine, which perhaps swelled into a knob possessing a slight constriction about its circumference. Now, since the outer covering of this terminal scale, whatever its form, is shed just as are the coverings of all other scales, the constriction allowed the shed layer to be left hanging as a dry shell upon the new layer which pushed it off. This is indicated on the diagram (Fig. 38). The result is a string of shed castings of the terminal spinal button, forming in the aggregate the rattle (Fig. 39). Whenever this is agitated, it makes the familiar half metallic, half insect-like sound.

Thus, in a few words, a long and slow process may be recapitulated, but why, indeed, has the rattle been produced, or why do snakes vibrate their tails when they are frightened or disturbed? We know from experience that species living among dry leaves make a considerable noise in this way, but the rattlesnake, living in the open grassy plains, would not do so. Surely, the rat-



A Neotropical Rattlesnake (*Crotalus durissus*) from Querétaro, México in defensive posture. Photograph by Louis Pornas.

tle is not needed to warn away the snake's prey. No such altruism need be considered. The rattler lies in wait, striking the rabbit or bird upon which it feeds, then withdraws without rattling, to wait for the prey to die. At first sight, man seems to be the snake's only enemy, but the rattler is, of course, far older than man on this continent. What native animal, then, had the rattlesnake to fear on a wholesale scale, which coincided in its distribution with the area where these snakes may conceivably have been evolved? Ancestors of the wide-ranging bison fulfill these conditions, and we know that there were earlier bisons, for their fossil remains have been found. They were probably widespread also, for the remains occur in Michigan, Kentucky, and many other States. The hoofs of these ponderous animals, traveling over the plains, must have been distinctly dangerous to snakes living in the open, while the snake's bite would be distinctly unpleasant to the bison, although death would probably have rarely ensued. The bison would gladly keep out of the snake's way if warned, and this warning the rattle gave.

It has been suggested that the rattle served some purpose for signaling between the snakes, perhaps a mating call or an assembly call for group hibernation. This is not a fact. In the first place, abundant opportunity for observation has never shown it to serve such a function; and, again, recent experiments have shown that the rattlesnake's hearing is confined to a range of sounds of wave length far different from that of the rattle. Thus the snake is deaf to the noise of its rattle.

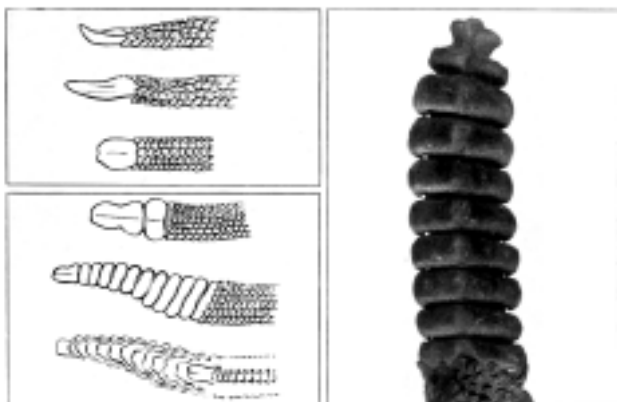


fig. 38. TIPS OF THE TAILS OF SNAKES

Upper two, non-rattling vipers; lower four showing rattle during growth, lowest in cross section.

fig. 39. THE RATTLE OF THE RATTLESNAKE IN LIFE

¹ Excerpted from Barbour, T. 1926. *Reptiles and Amphibians. Their Habits and Adaptations.* Houghton Mifflin Company, Boston and New York.