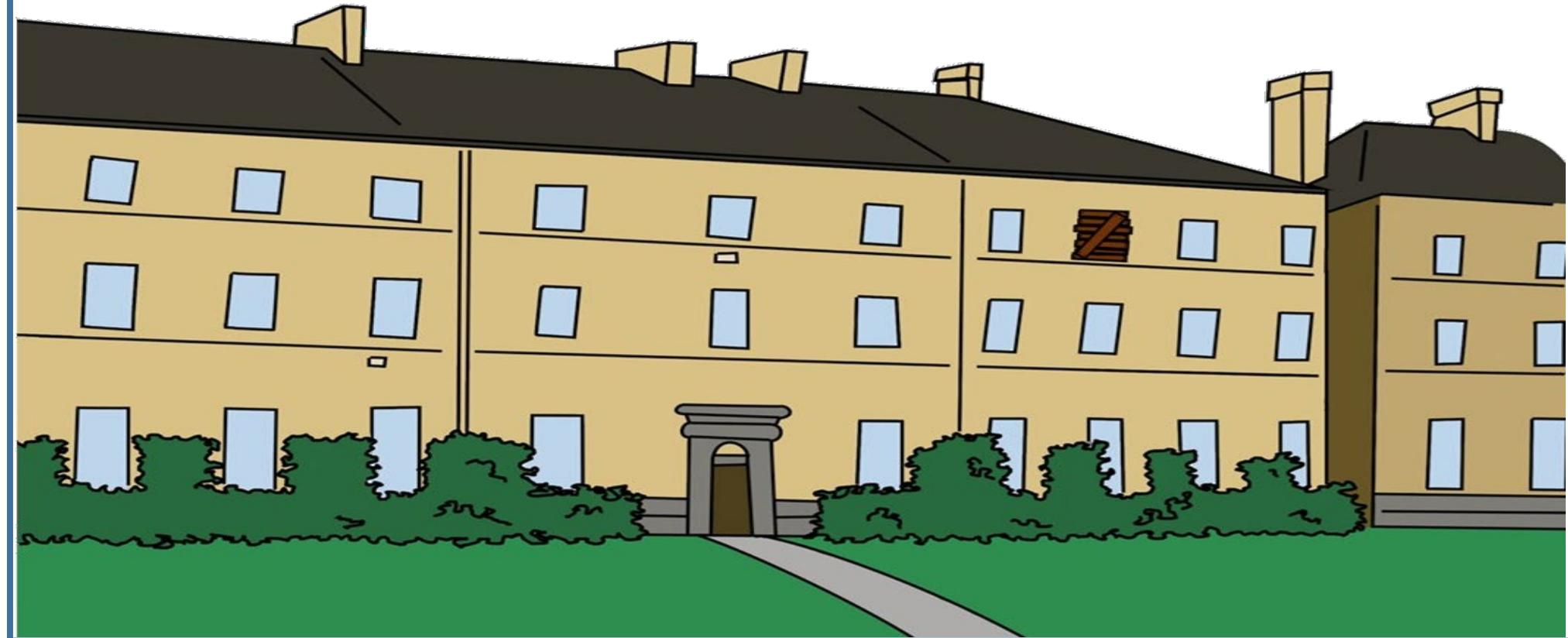


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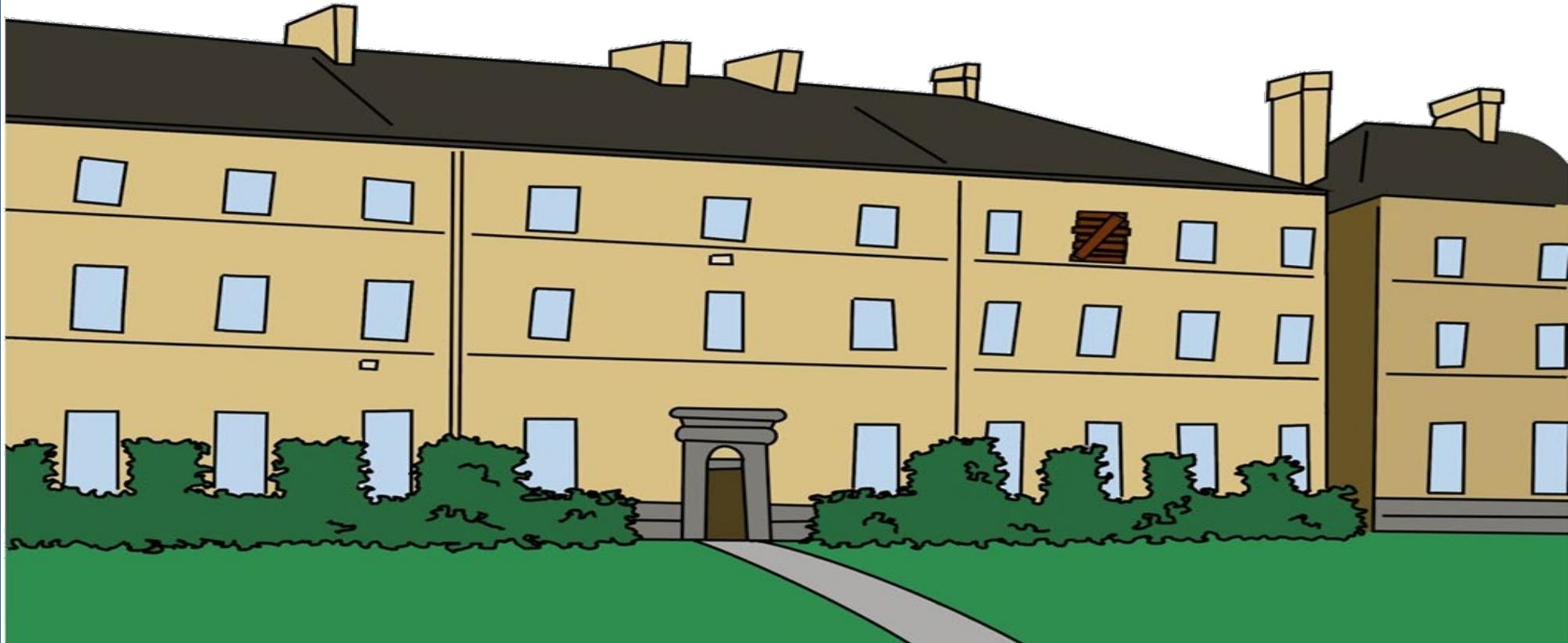
Presents
"The Life and Times in Victorian London"



Baker Street Elementary

The Life and Times in Victorian London

058 - Slithering Assassins - Snakes in the Canon -- 09/09/2020



*Welcome to topic number 58...
Today, Master Paget and I will look
at those disgusting reptiles, the
snake...*



In "The Adventure of the Speckled Band," Sherlock Holmes will identify the culprit behind Julia Stoner's death as a swamp adder, "the deadliest snake in India."



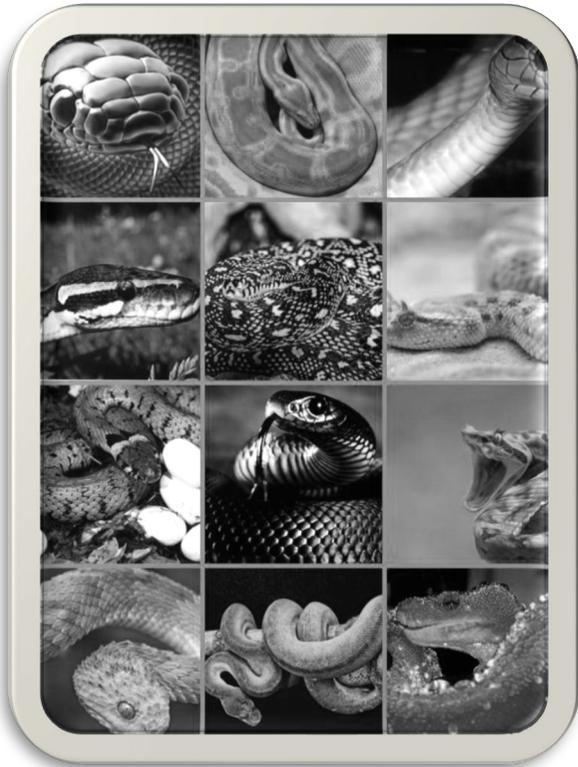
While this particular serpent is fictitious, England is home to one poisonous adder (Vipera berus) that will kill two people between 1950 and 2020.



This mortality rate can be compared to the saw-scaled or carpet viper (Echis carinatus) found from Senegal to Bengal that bites and kills more people than any other snake or Australia's inland taipan (Oxyuranus microlepidotus) whose venom is considered the world's most lethal.



More than 3,000 species of snakes exist in the world, and they are found on all continents except Antarctica.



Of these, about 600 are venomous, with 200 considered "medically important" by the World Health Organization. In addition to being venomous, snakebites from the medically important species result in high levels of morbidity, disability, or mortality.





In addition to being common in all but the coldest climates, snakes have several common features, including using their tongues (not noses) to "smell;" not having eyelids, nor eyes that move; and a lack of ears.





These animals "hear" through vibrations from the ground. In other words, the swamp adder Holmes encountered was a very unique variety. It could actually hear a whistle (not to mention descend a cord and drink milk), which is biologically impossible, except in a few species.

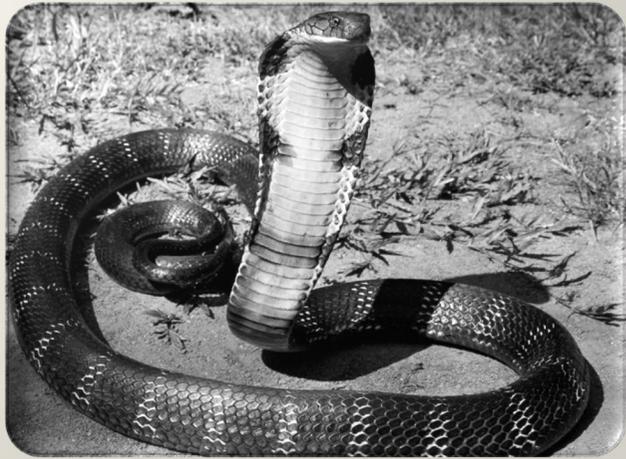


All the same, different true species have some amazing qualities. Corn snakes use their scales to dig into bark and climb trees, the paradise tree snake "flies" by flinging its body into the air and catching airflow...



...the African black mamba snake can travel up to 12 mph, and the king cobra can go months between feedings.





The adder, such as Roylott's swamp adder, is a member of the Elapidae family (also includes cobras and mambas), characterized by short, small, fixed fangs.



After biting and injecting the venom, they usually do not let go of their victim. This is in contrast with the Viperidae snake family, which has a very developed venom injection system with fangs that become erect just before biting.

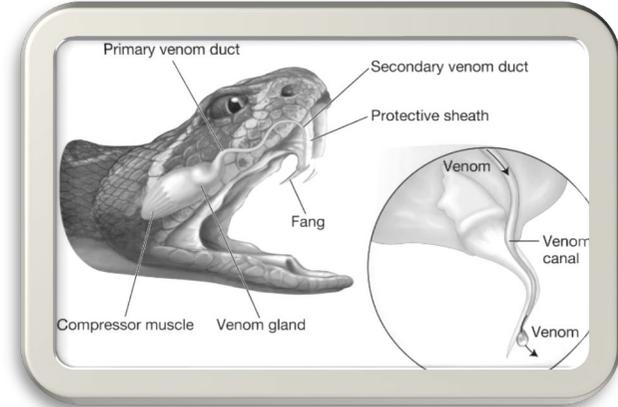


They release their prey after injection and wait for the venom to take effect. The final class of venomous snakes, the Colubridae, have fixed rear fangs and chew their victim while injecting the venom.

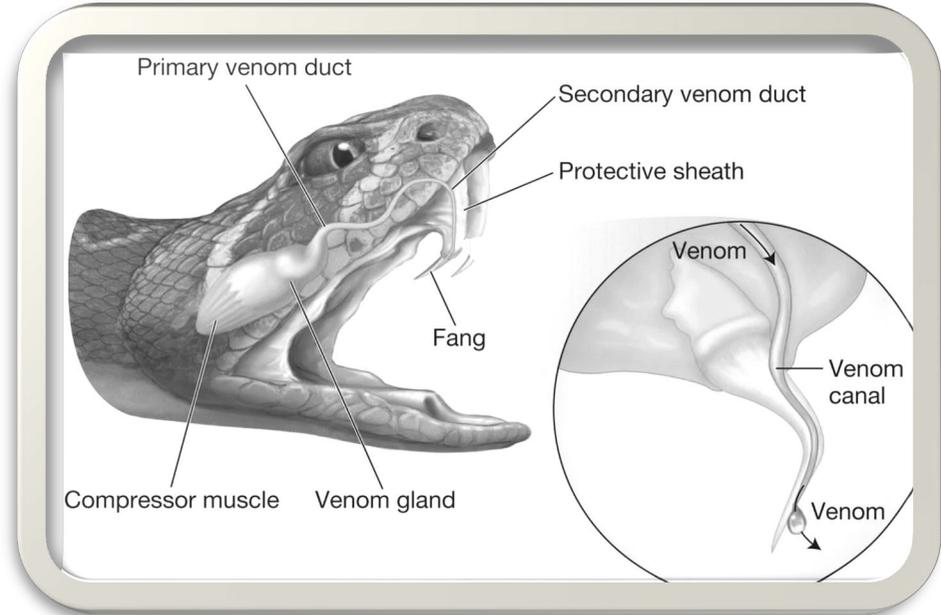


Regardless of the type of fang, the injection system has five parts:

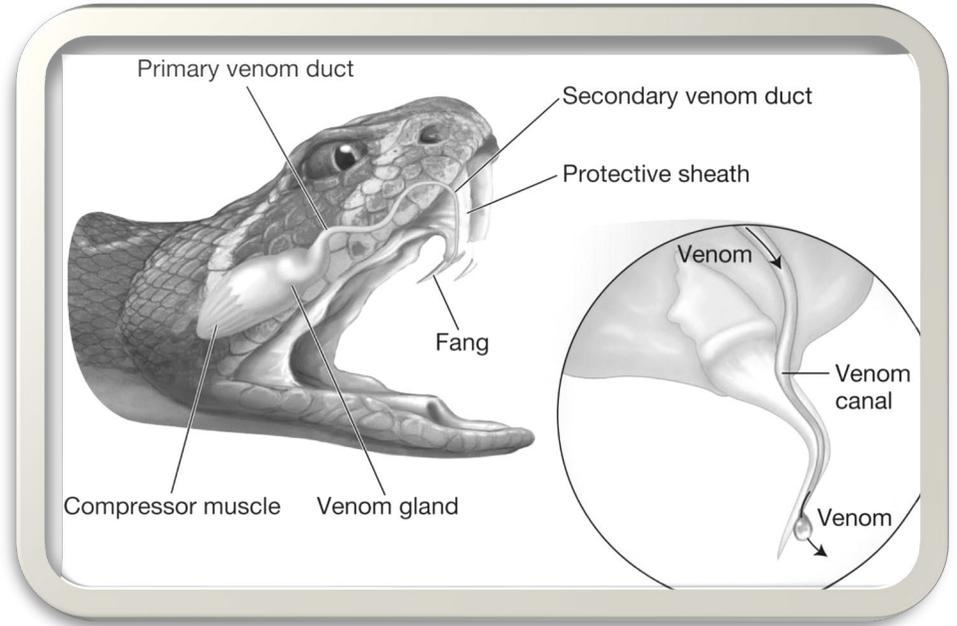
- 1. The venom is the harmful substance. With few exceptions, snakes are venomous, not poisonous. Venoms must be injected and once in the bloodstream become effective...**



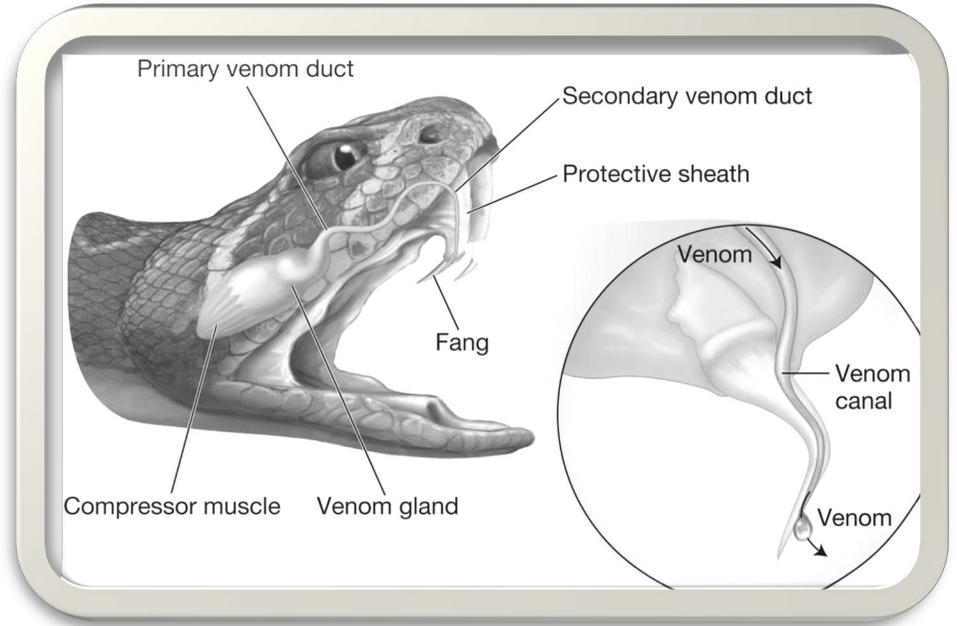
... Poisons are toxins that must be ingested. For example, the garter snake is poisonous because it eats other reptiles with toxins in their skins. The snake stores the poison in its liver and other organs and kills its victim when the snake is eaten.



2. *Venom glands are found in the head and produce and store the toxin*
3. *Special muscles near the glands squeeze the toxins from the glands*



4. Ducts transport the venom from the glands to the fangs and 5. Fangs, the teeth that inject the venom, do so through canals through the center of these specialized teeth.

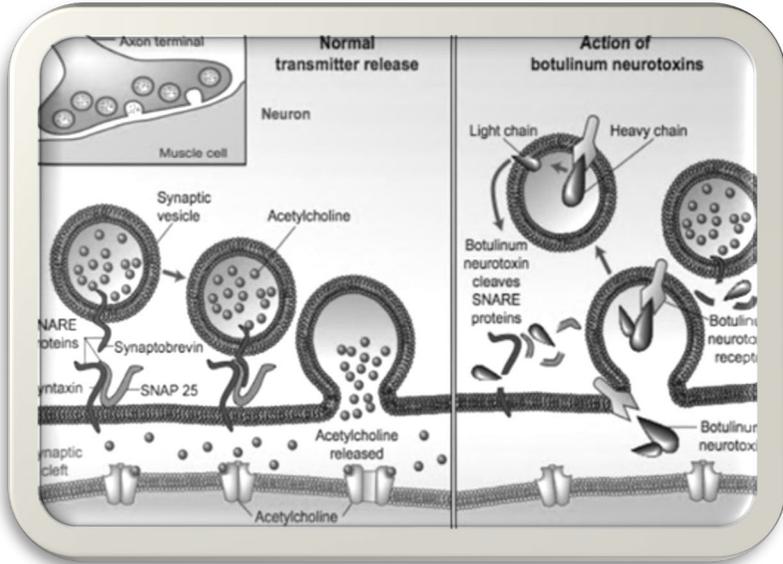


Venoms fall into three main categories:

- 1. Cytotoxins destroy cells, which leads to necrosis, and are usually specific to a particular organ*



2. Neurotoxins affect the nervous system, disrupting the transmissions between neurons and causes paralysis
and 3. Hemotoxins cause red blood cells to burst open and interfering with clotting, leading to organ damage and tissue death.



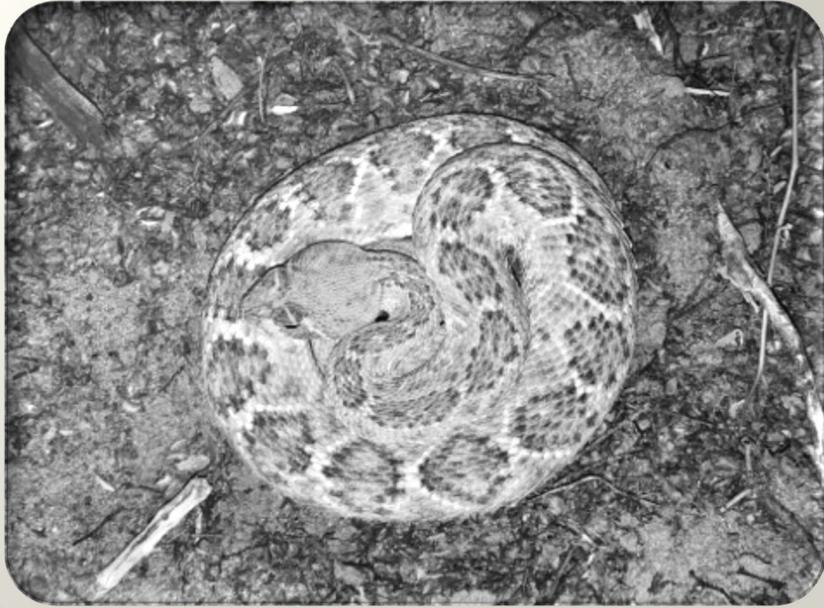
Venomous snakes are identified by their eye pupils (round for non-venomous; elliptical for venomous); a pointed snout; a broad, triangular head with a bulbous head and skinny neck; and a colorful pattern — although the African black mamba is one color.



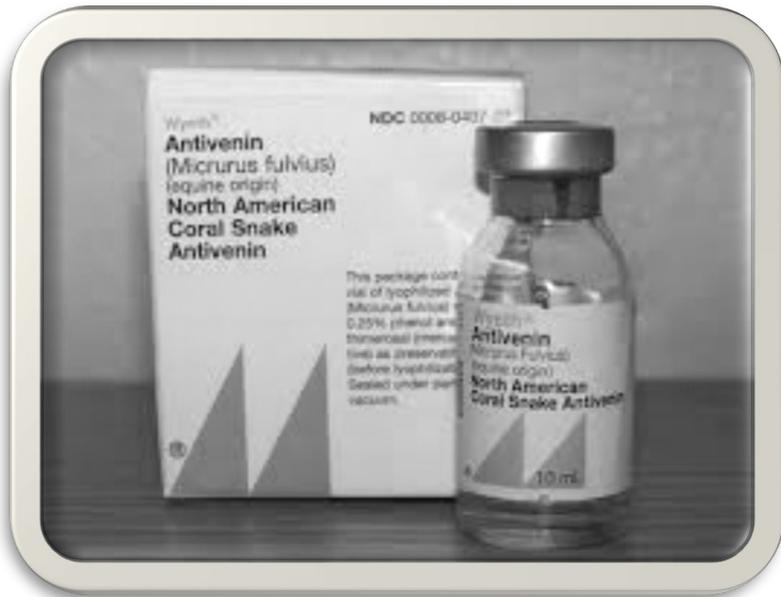
The coral snake has a black, yellow, and red bands which can be identified with the rhyme: "red touches yellow will kill a fellow."



Snake venom glands appeared about 60-80-million years ago and have continued to evolve, with the toxins continuously becoming more deadly.



The current anti-venoms (developed by injecting diluted venom into horses and sheep and filtering out the anti-bodies) will be running low by 2015, and new targeted anti-venoms will be developed to address these stronger venoms.



The creation of anti-venoms has been credited to two groups working simultaneously, but independently, on the problem.



Cesaire Auguste Phisalix, a naturalist, studied the problem from a natural immunity approach while Albert Calmette, a microbiologist, put his study of anti-virals into practice and produced anti-venom in Lille in 1895.



Given that the account of the speckled band will first appear in 1892 and occurred in 1883, no antivenom was yet available. Thanks to Holmes' fast action, however, Miss Stoner will have no need for it.



*So we have completed
topic 58 in our series...*

*... yes, but we'll be
back with another
topic soon...*



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