PARENTAL CARE IN AMPHIBIANS

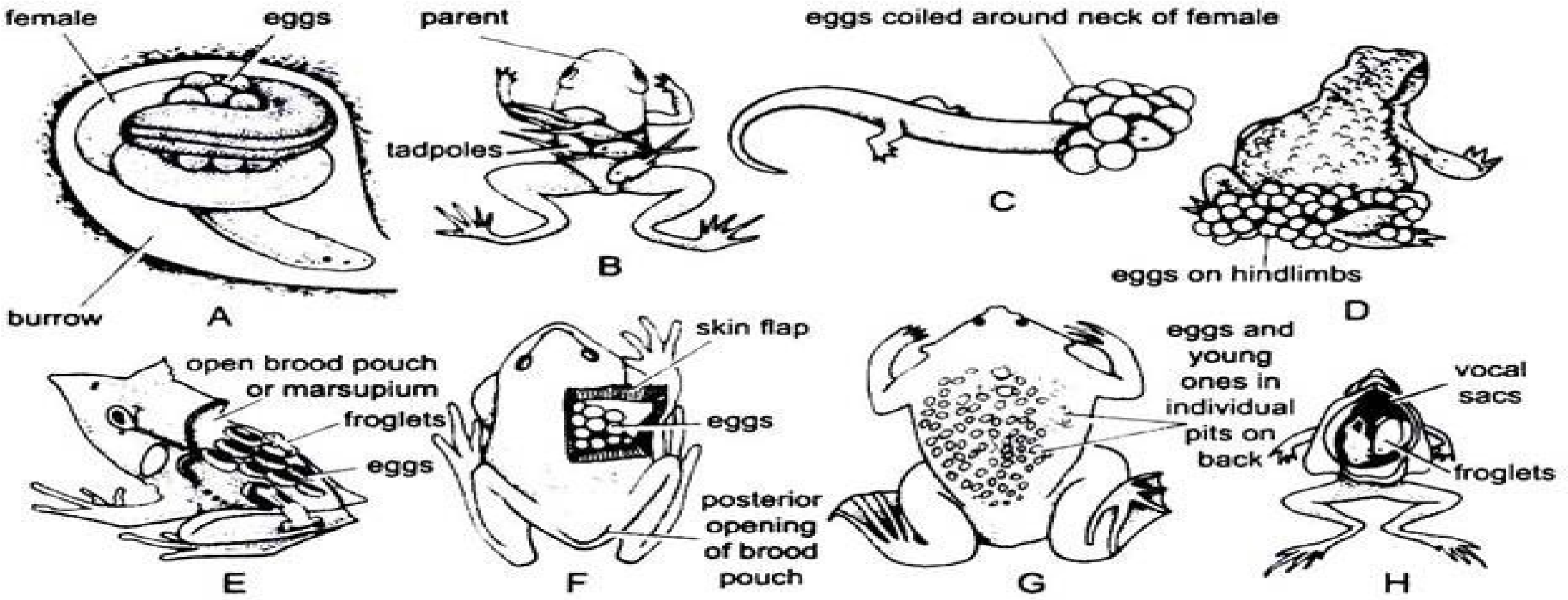
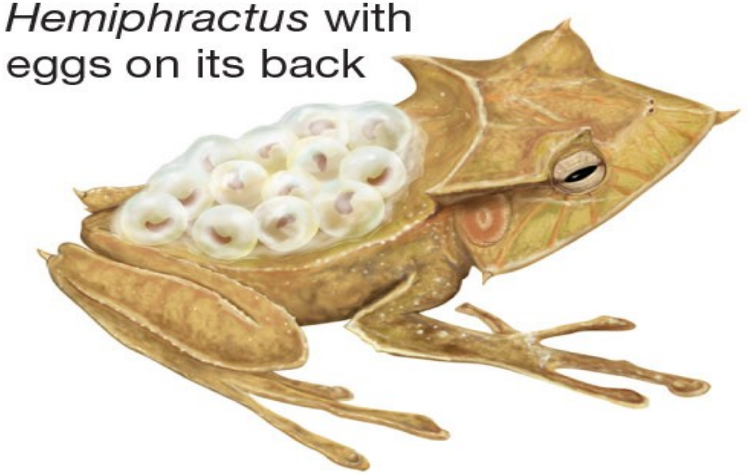


Fig. 20.2. Direct parental care in Amphibia. A–Female *Ichthyophis* coiling round eggs; B–Transportation of tadpoles attached to back of a parent; C–*Desmognathus fuscus* with eggs; D–*Alytes obstetricans* carrying eggs around his thighs; E–A marsupial frog with eggs exposed in open brood pouch on back; F–*Nototrema* or *Gastrotheca*, with flap of dorsal brood sac cut open to show eggs; G–In *Pipa*, eggs develop completely into individual capsules on back of female; H–Froglets inside vocal sacs cut open of female *Rhinoderma darwinii*.

Hemiphractus with eggs on its back

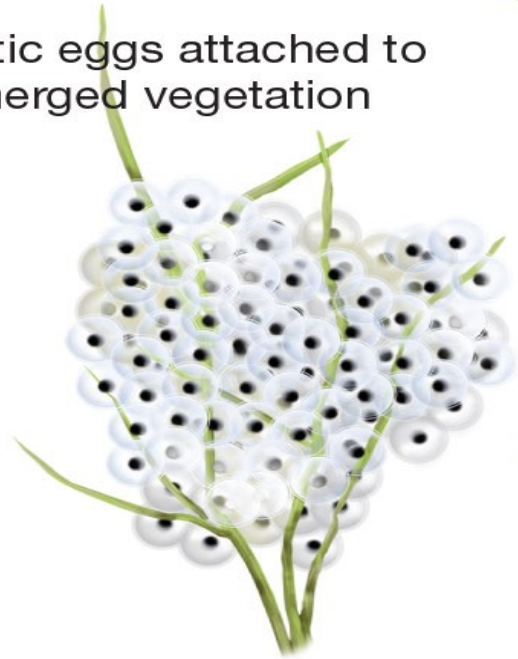


eggs of *Phyllomedusa* on a leaf above water

tadpoles on the back of a male *Colostethus*

aquatic eggs free-floating in a string

aquatic eggs attached to submerged vegetation



meringuelike nest made by amplectic pair of *Physalaemus*

Gastrotheca with eggs in the pouch

Poisonous And Non- Poisonous Snakes

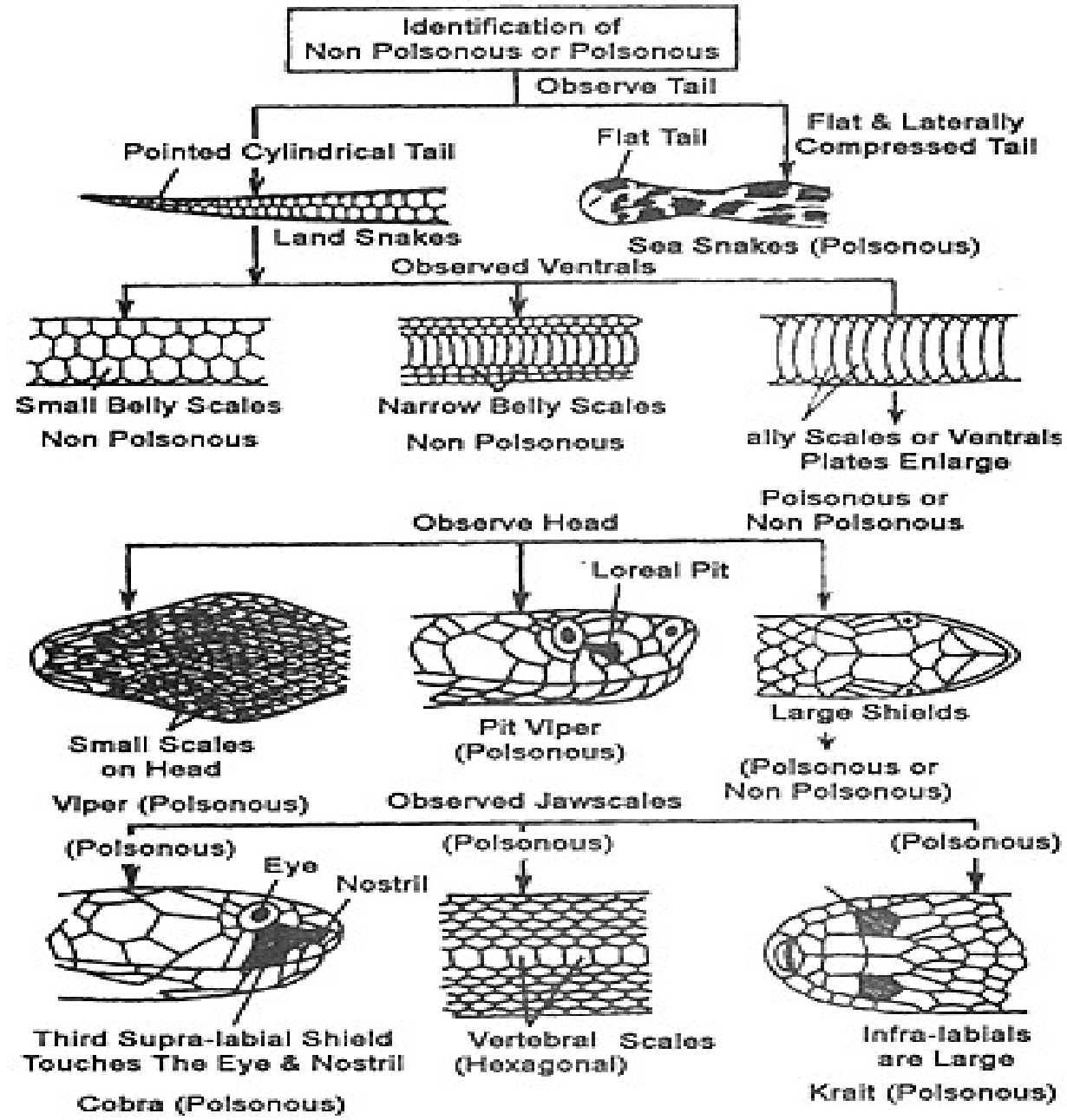


Table of identification of Poisonous and Non Poisonous Snakes

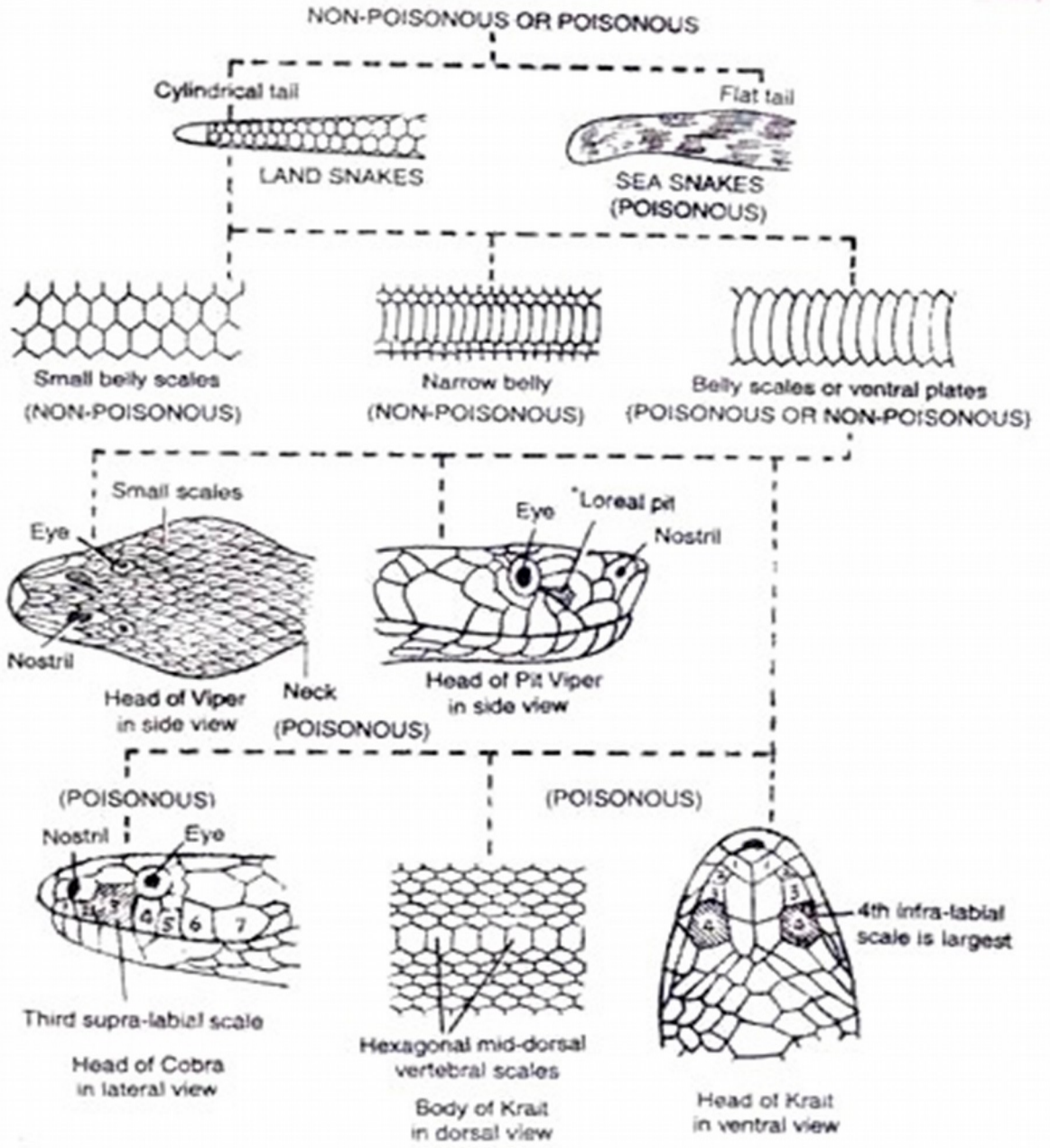
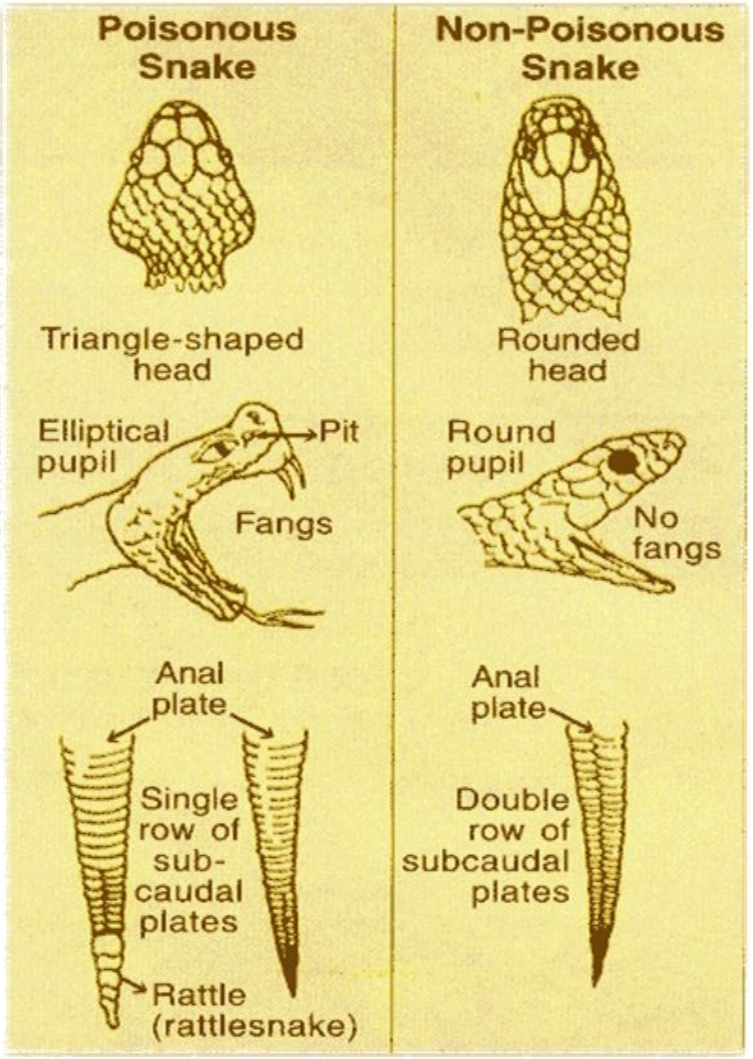


Fig. 4.62. Identification of poisonous and non-poisonous snakes.

DIFFERENCE BETWEEN POISONOUS AND NON-POISONOUS SNAKES



2. Observe ventral scales

↓

Small belly scales
non-poisonous

↓

Narrow belly scale
non-poisonous

↓

broad, covering the entire width of belly
poisonous
Or
non-poisonous

3. Observe head

Small scales
pit absent
Viper

Small scale,
Loreal pit (infrared-detecting organs)
Pit Viper

Shields on head
poisonous
Or
non-poisonous

Identification of snake bite

4. Observe jaw scales

3rd supra-labial shield (upper –lip shield) touches the eye and nose shield poisonous

Non-poisonous snake

Neck with hood
cobra

Neck without hood coral spots on belly
Coral snake

How to Differentiate Between Poisonous Snakes and Non Poisonous Snakes

1. Observe tail

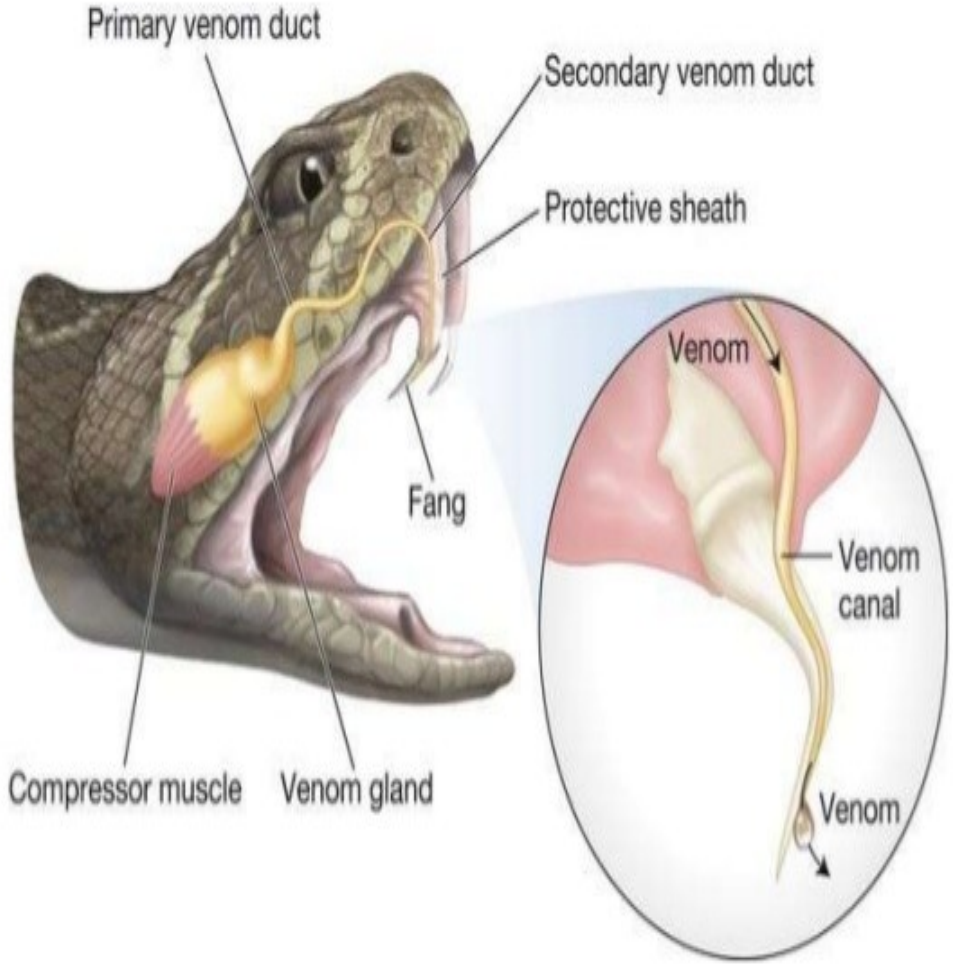
Pointed, cylindrical tail

Land snake

Flat and laterally compressed tail

Marine snake Poisonous

POISON APPARATUS



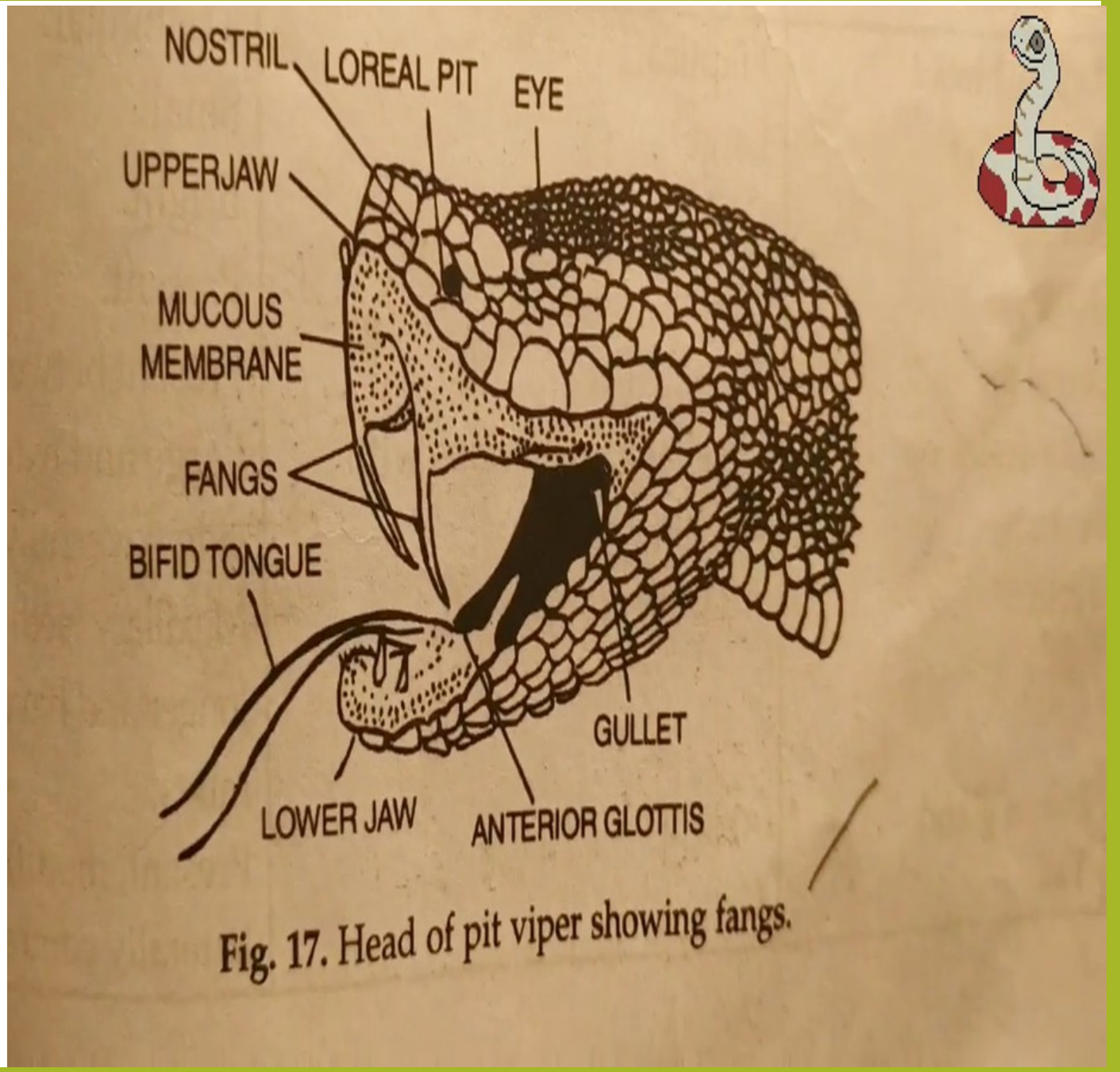
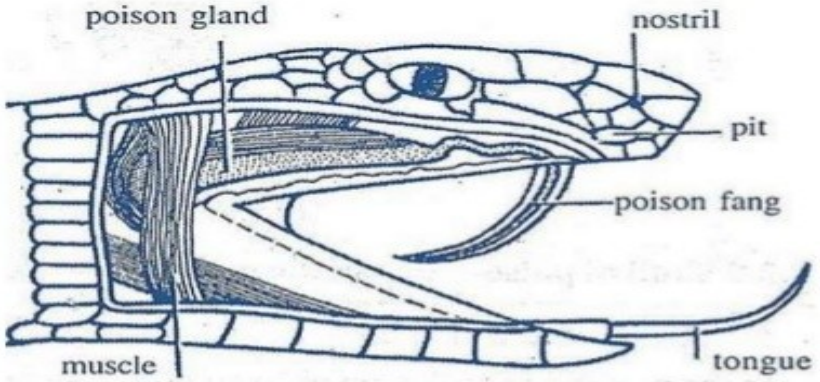


Fig. 17. Head of pit viper showing fangs.



SNAKE-POISONOUS -APPARATUS

On the basis of structure and position, the fangs are of the following types:

1) **Proteroglyphous type:** The fangs are comparatively small and they are present in front of the maxillae. The fang has a groove all along its anterior face.
Examples : Cobra, Krait, Sea snakes and Coral snakes.

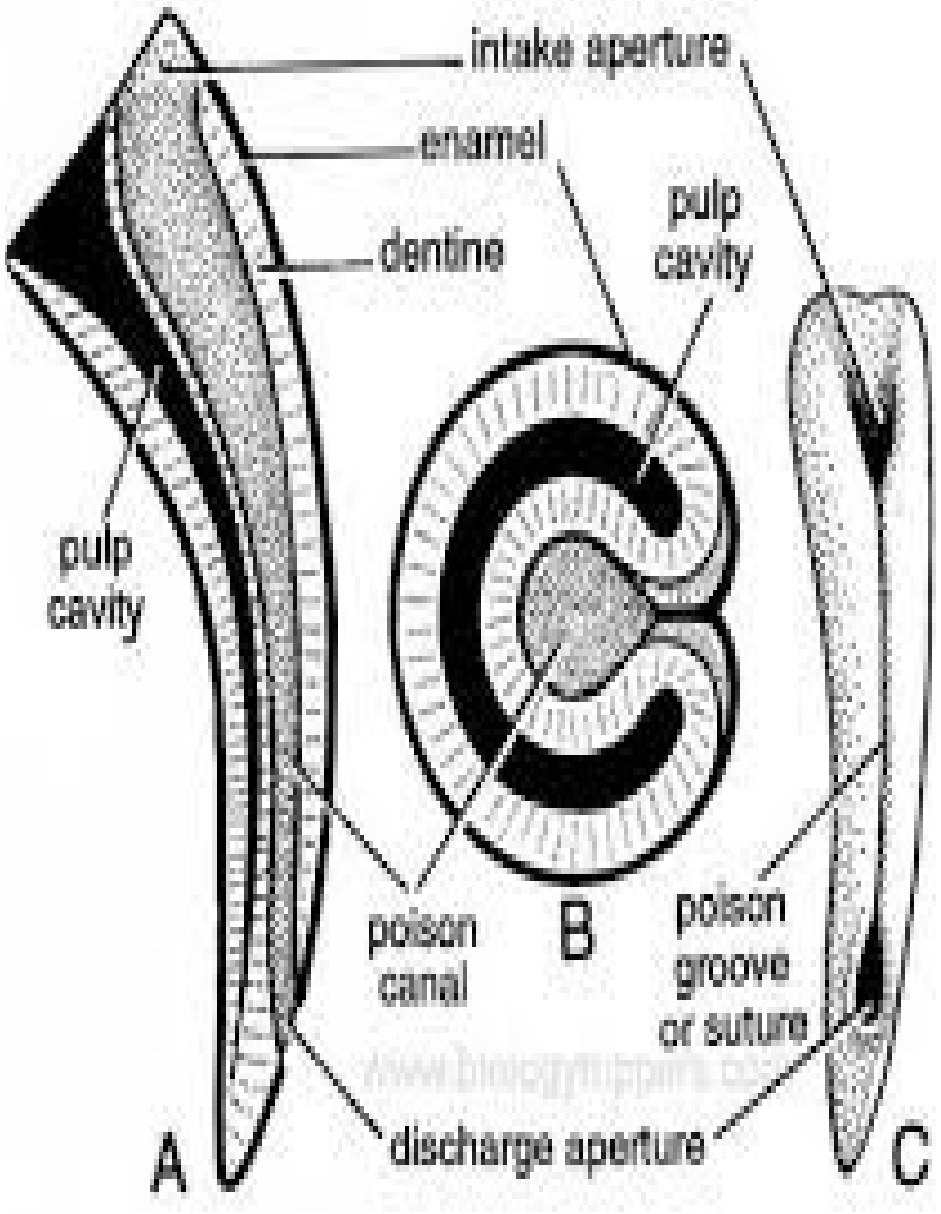
2) **Stenoglyphous type:** The fangs are movable and turned inside. Poison canal runs through the fang and opens at the tip.
Examples: Vipers and Rattle snakes.

3) **Opisthoglyphous type:** The fangs are small and lie at the back portion of maxillae. The fang has a groove along its posterior face.
Examples : Some colubrid snake (African tree snakes)

4) **Aglyphous type:** Aglyphous dentition is present in the non-poisonous snakes.

Toxicity of Snake Bite

The snake poison or snake venom is useful in killing the prey and in defense.



- **Biting mechanism of snake:-**
- The skull and jaw bones of poisonous snakes are very flexible. They are loosely articulated thus allowing a considerable degree of adjustment during the act of swallowing or striking. In cobras, the fangs are permanently erect. But in vipers the large fangs lie against the roof of mouth when closed. Thus the mechanism of biting serves two main purposes-
- **a. Erection of fangs and**
  b. Injection of poison into victim's body
- During a strike a series of movements occur in chain. Contraction of diagastric muscles lowers the mandibles so that mouth opens and lower end of quadrate thrusts forward. This in turn pushes the pterygoid forward. The forward pull of pterygoid in turn pushes the ectopterygoid upwards. This causes the maxilla bearing fangs to rotate through 90degree. As a result fangs become vertically erect and in the most effective position to strike. A simultaneous stretching of constrictor muscles around the poison gland forces its poison through poison duct into the canal of fang to be injected into the victim. When mouth is closed by the contraction of temporal muscles, the above movements are reversed. The fangs embed in the prey which is drawn in the mouth. At the same time the vertical fangs rotate to become horizontal.

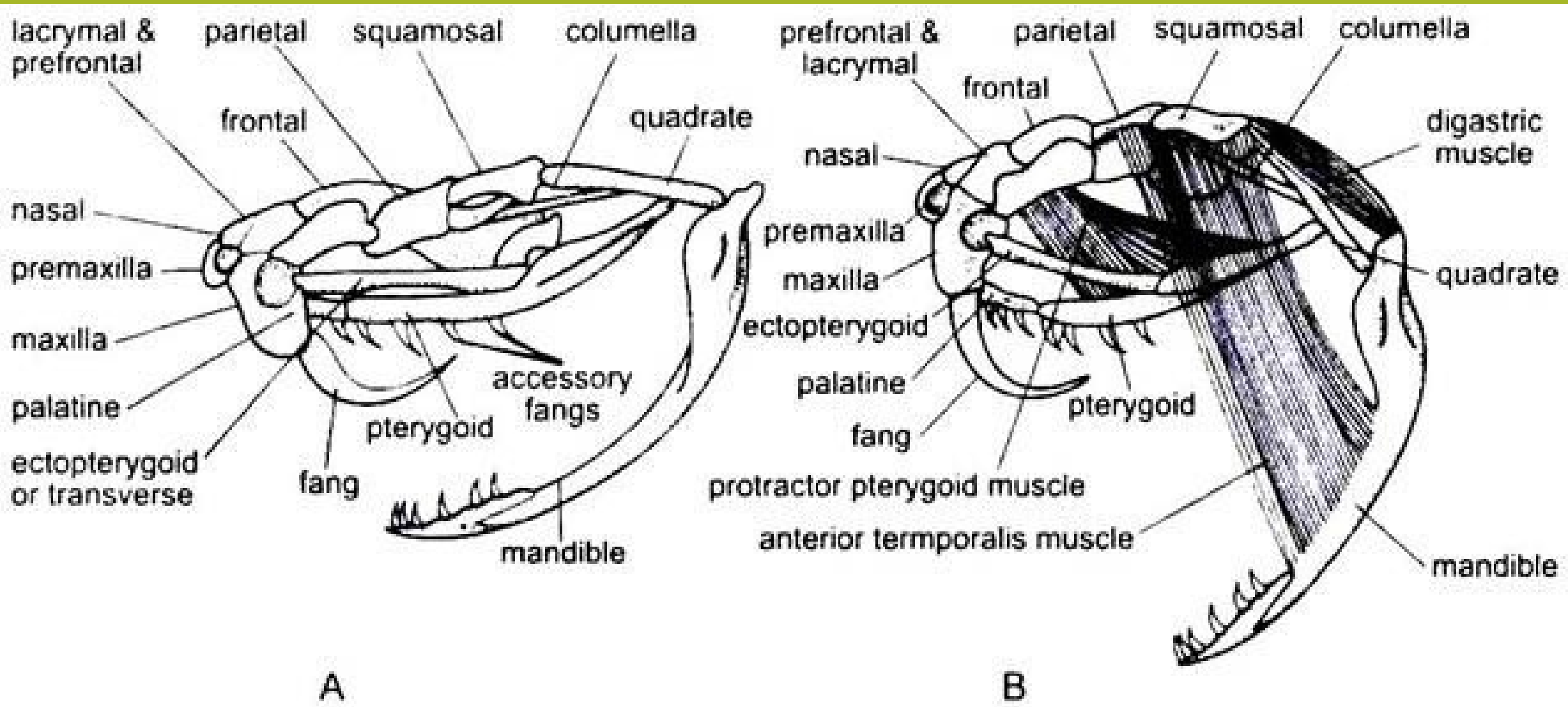


Fig. 23.4. Skull of a viper showing biting mechanism. A–Mouth closed at rest; B–Mouth opened when striking the prey.