

XXIV. A KEY TO THE SNAKES OF OKLAHOMA.*

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The following key is published in order that the people of Oklahoma may have an easy means of identifying any snake found in the State. The mechanism has been made as simple as possible, so that one untrained in herpetology need have no trouble; the older type of key has been used, particularly because that is the one which most high school students are familiar with in Gray's *Manual of Botany*. A glossary and numerous figures are added in order to explain all technical terms and difficult points.

Only those forms are here included which are known to occur in Oklahoma, or in a few cases those which apparently should be found here. The distribution given for each is only that part of its total range which is within Oklahoma. So little is known concerning the distribution of the snakes of our State that it has been impossible to make the ranges at all definite; it is hoped that within the next few years further collecting will add materially to our knowledge. With some exceptions the scientific names used are those of Stejneger and Barbour's *Check List of North American Amphibians and Reptiles* (1923). The author wishes to acknowledge his indebtedness to Dr. F. N. Blanchard for those parts of this key dealing with the genera *Lampropeltis* and *Natrix* and also for several of his figures.

Blanchard's nomenclature has been followed also for the genera *Arizona*, *Carphophis*, and *Virginia*. *Masticophis* and *Coluber* species have been named in accordance with the author's revision of the genus *Coluber* for a preliminary note of which see—*A Note on the Genera Coluber and Masticophis and a Description of a New Species of Masticophis*. (Occ. Pap. Mus. Zool. Univ. Michigan, No. 139, pp. 1-14, pls. I-III.)

*Contribution from the Zoological Laboratory of the University of Oklahoma, Second Series, No. 71.

A KEY TO THE SNAKES OF OKLAHOMA

- A. A distinct pit between eye and nostril; pupil of eye vertically elliptic. (Pit Vipers; ALL POISONOUS). (Figs. 1, 2).

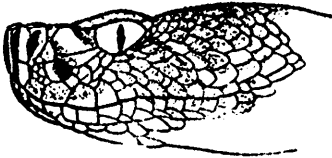


Fig. 1. (From Stejneger).

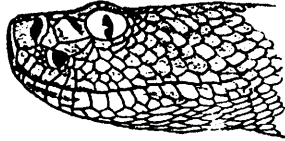


Fig. 2. (From Stejneger).

- B. Tail terminating in a rattle. (Rattlesnakes). (Fig. 3).

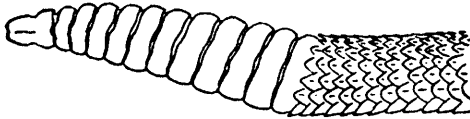


Fig. 3. (From Stejneger after Garman).

- C. Top of head covered with numerous small scales irregularly arranged. (Fig. 4).

..... *Crotalus*.

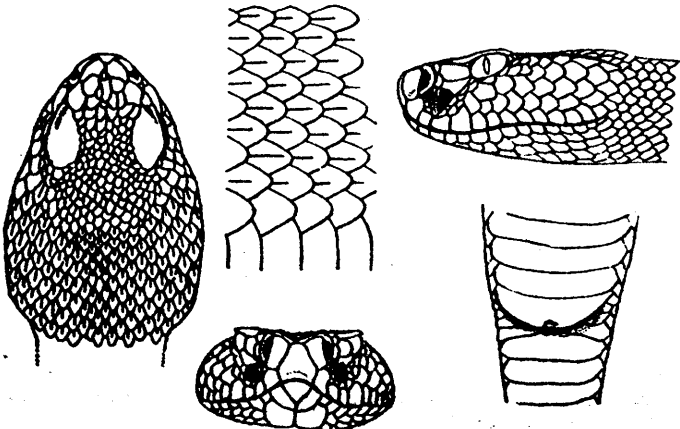


Fig. 4. (From Cope).

- D. Dorsal pattern of irregularly V-shaped blotches. (Fig. 6).
 *Crotalus horridus* Linne.
 Timber Rattlesnake.
 (Northeastern Oklahoma).
- DD. Dorsal pattern of roughly diamond-shaped or rounded spots.
- E. Light postsuperciliary line reaching second scale row above mouth at least two scales anterior to angle of mouth. (Figs. 1, 7).
 *Crotalus atrox atrox* (B. & G.).
 Texas Diamond-back Rattlesnake.
 (Southern Oklahoma).
- EE. Light postsuperciliary line reaching second scale row directly above angle of mouth or not at all. (Figs. 2, 8).
 *Crotalus confluentus* Say.
 Prairie Rattlesnake.
 (Western Oklahoma).
- CC. Top of head covered with a few large plates symmetrically arranged. (Fig. 5).
 *Sistrurus*.

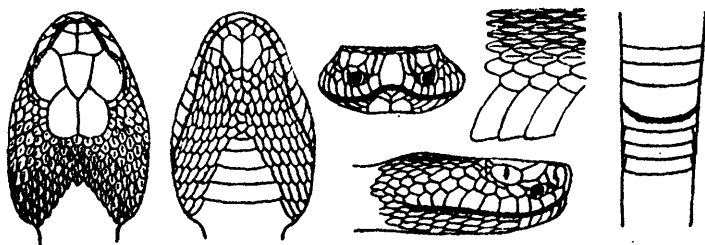


Fig. 5. (From Cope).

D. Prefrontal in contact with loreal.

E. Scale rows usually 25.

- *Sistrurus catenatus catenatus*
 (Raf.).
 Massasauga.
 (Northeastern Oklahoma).

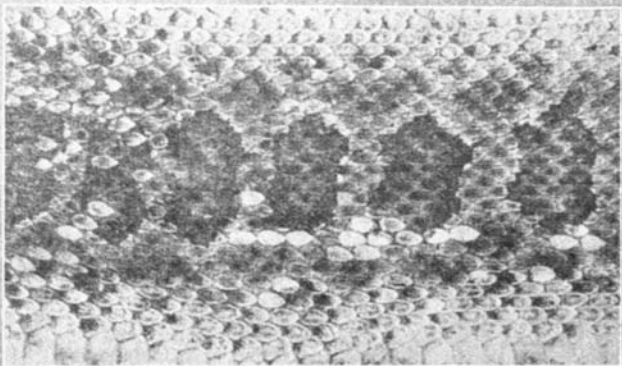
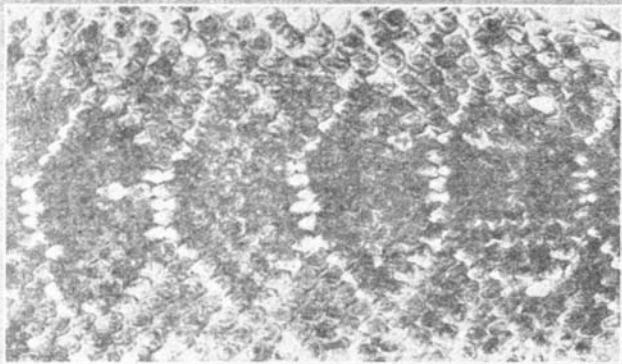
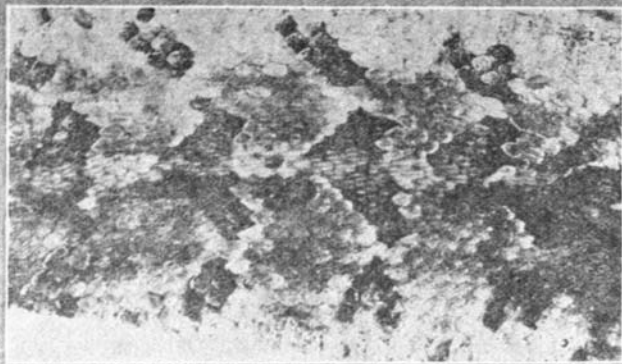


PLATE III

EE. Scale rows usually 23.

..... *Sistrurus catenatus edwardsii*
(B. & G.).
Massasauga.
(Western Oklahoma).

DD. Prefrontal not in contact with loreal.

..... *Sistrurus miliarius* (Linne).
Ground Rattlesnake.
(Eastern Oklahoma).

BB. Tail not terminating in a rattle. (Figs. 9, 10).

..... *Aghistrodon*.

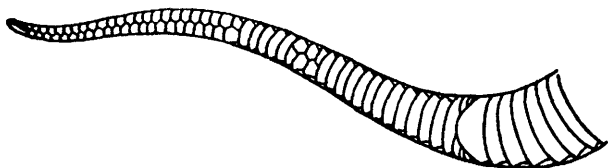


Fig. 9. (From Stejneger).

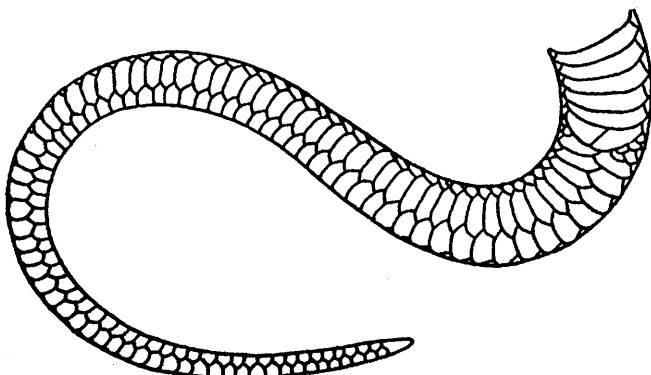


Fig. 10. (From Stejneger).

C. Scale rows 23; loreal present; small scales present between eye and supralabials (Fig. 11); post-parietals absent.

..... *Aghistrodon mokasen* Beauvois.
Copperhead.
(Probably in most of Oklahoma).

Fig. 6. *Crotalus horridus*. Showing dorsal pattern. x 5/8.

Fig. 7. *Crotalus atrox atrox*. Showing dorsal pattern. x 1/2

Fig. 8. *Crotalus confluentus*. Showing dorsal pattern. x 3/4.

CC. Scale rows 25; loreal absent; eye resting directly upon at least one of the supralabials (Fig. 12); postparietals present.

..... *Aghistrodon piscivorus* (Lacepede).

Cotton-mouth; Water Moccasin.
(Southern Oklahoma).



Fig. 11. (From Stejneger).

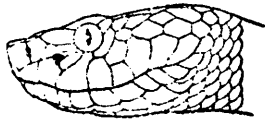


Fig. 12. (From Stejneger).

AA. No pit present between eye and nostril; pupil of eye round. (Figs. 13, 16.) (NON-POISONOUS SNAKES; except *Tantilla* and *Micrurus*.)

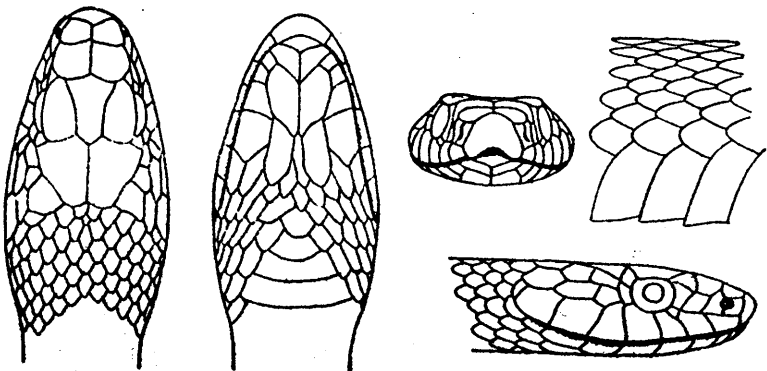


Fig. 13. (From Cope).

B. Ventrals about the same size as dorsals, at least not more than twice as broad. (Fig. 14).

..... *Leptotyphlops dulcis* (B. & G.).
Blind Snake.

(Southern Oklahoma).

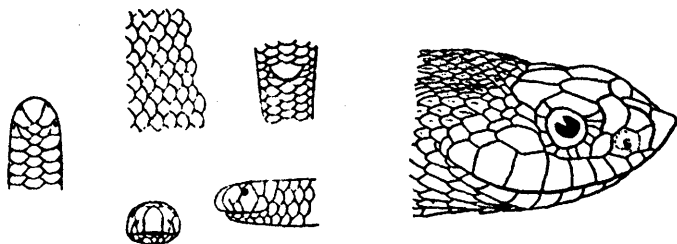


Fig. 14. (From Cope).

Fig. 15. (From Blanchard).

BB. Ventrals transversely elongate, much larger than dorsals. (Figs. 9, 10).

C. Rostral abnormal; turned up in front and keeled above.

..... *Heterodon*.

Hog-nose Snake; Spreading Ad-
der; Spreading Viper; Puff Ad-
der.

Fig. 15. (From Blanchard).

D. Small scales present between prefrontals. (Fig. 16).

..... *Heterodon nasicus* B. & G.
(Oklahoma).

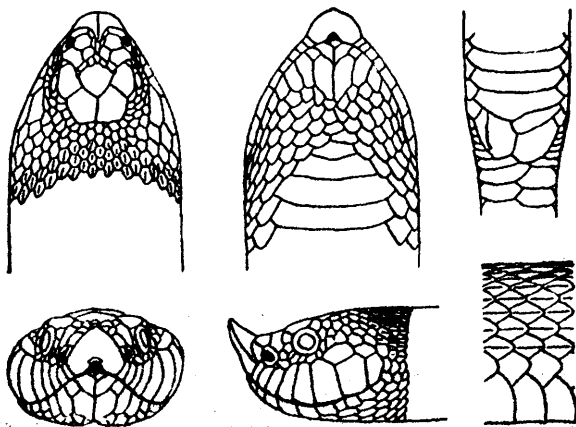


Fig. 16. (From Cope).

DD. No small scales present between prefrontals. (Fig. 17).

..... *Heterodon contortrix* (Linne).
(Oklahoma).

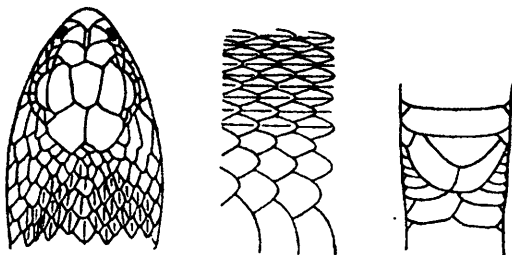


Fig. 17. (From Cope).

CC. Rostral normal; rounded and smooth. (Figs. 13, 24, 25).

D. Dorsal scales smooth. (Fig. 19).

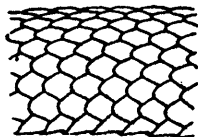
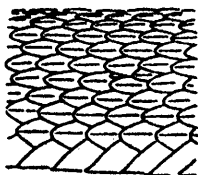


Fig. 18. (From Blanchard). Fig. 19. (From Blanchard).

E. Anal plate entire. (Fig. 9).

F. Scale rows on body not reduced in number posteriorly.

..... *Cemophora coccinea* (Blumenbach).

Scarlet Snake.

(Eastern Oklahoma).

FF. Scale rows reduced in number posteriorly.

G. 20 to 40 of caudals entire.

..... *Rhynchophis lecontei* (B. & G.).

Long-nosed Snake.

(Southwestern Oklahoma).

- GG. Caudals in a double series. (Fig. 10).
- H. No spots on belly, uniform light color; infralabials 12 to 15.
 *Arizona elegans elegans* (Kennicott).
 Faded Snake.
 (Western Oklahoma).
- HH. Belly more or less spotted; infralabials 7 to 10.
 *Lampropeltis*.
- I. Color pattern without red and without dorsal blotches of brown or gray with dark borders.
- J. Scale rows on middle of body usually 21; a yellow spot on practically every dorsal scale.
 *Lampropeltis getulus holbrooki* (Stej.).
 Speckled King Snake.
 (Oklahoma).
- JJ. Scale rows on middle of body 23-25; no light centers dorsally on the scales between the cross bands; head mostly black.
 *Lampropeltis getulus splendida* (B. & G.).
 King Snake.
 (Southwestern Oklahoma).
- II. Pattern with red or with dorsal blotches of brown, gray, or red with black borders.
- J. Pattern of black-edged dorsal blotches of brownish or dark red, only narrowly in contact with the 5th row of scales, or extending no lower than the 6th or 7th rows.
 *Lampropeltis calligaster* (Harlan).
 Yellow-bellied King Snake.
 (Oklahoma).
- JJ. Pattern in rings; or if in blotches or saddles of brown, gray, or red, these broadly in contact with the 5th or a lower row of scales.

- K.* Light cross-bands usually less than 25; pattern practically in rings; snout light speckled with black.
 *Lampropeltis triangulum amaura* (Cope).
 Louisiana Milk Snake.
 (Southeastern Oklahoma).
- KK.* Light cross-bands usually more than 25.
- L. Snout black; black bands of body often widened dorsally into the red areas; pattern ringed.
 *Lampropeltis triangulum gentilis* (B. & G.).
 Western Milk Snake.
 (Western Oklahoma).
- LL. Top of head light with black markings; pattern of red saddles rather than rings, black not encroaching on the red dorsally.
 *Lampropeltis triangulum sypila* (Cope).
 Red Milk Snake.
 (Eastern Oklahoma).
- EE. Anal plate divided. (Fig. 10).
- F. Loreal present. (Fig. 13).
- G. One or more preoculars present. (Fig. 13).
- H. More than one preocular, either 2 or 3 (lower one may be very small). (Fig. 13).
- I. More than one anterior temporal. (Fig. 13).
- J. Scale rows reduced to 15 at posterior end of body.
 *Coluber constrictor flaviventris* (Say).
 Blue Racer.
 (Throughout Oklahoma).
- JJ. Scale rows reduced to 13 or 12 at posterior end of body.
 *Masticophis*.
 Whip Snakes.

The range of these three subspecies of *triangulum*—that is, *amaura*, *gentilis*, and *sypila*—most is Oklahoma, hence intermediate specimens not identifiable by means of this key will be found. For greater detail see—Blanchard, F. N., 1925, Mich. Acad. Sci. Arts and Letters, Vol. IV, Pt. II. Specimens of all three forms are of especial interest to the Museum.

- K. No black cross-bands present across neck or body.
- L. Head and anterior portion of body a uniform very dark brown, gradually becoming lighter posteriorly.
 *Masticophis flagellum flagellum*
 (Shaw).
 (Eastern Oklahoma).
- LL. Anterior portion of body not darker or only a very little darker than posterior part.
 *Masticophis flagellum flavigularis*
 (Hallowell).
 (Western Oklahoma).
- KK. Black or dark brown cross-bands present across neck or body.
- L. Dark brown cross-bands on neck separated by 1 to 2 scales of lighter brown; most of last supralabial cream-colored. (Juvenile).
 *Masticophis flagellum flagellum*
 (Shaw).
 (Eastern Oklahoma).
- LL. Dark brown cross-bands on neck separated by 3 or more scales of light brown; all but anterior lower corner of last supralabial brown. (Juvenile).
 *Masticophis flagellum flavigularis*
 (Hallowell).
 (Western Oklahoma).
11. Only one anterior temporal. (Fig. 20).

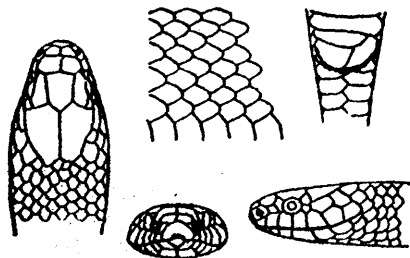


Fig. 20. (From Cope).

- J. A light-colored ring present around neck;
very dark brownish or blackish above.
..... *Diadophis punctatus arnyi*
(Kennicott).
Ring-neck Snake.
(Oklahoma).
- JJ. No ring around neck; color above grass
green.
..... *Liopeltis vernalis* (Harlan).
Smooth Green Snake.
(Oklahoma?).
- HH. Only one preocular.
- I. Color above grass green.
..... *Liopeltis vernalis* (Harlan).
Smooth Green Snake.
(Oklahoma?).
- II. Color above not grass green; dorsal surface
brown or reddish, either uniform or with
black cross-bands.
..... *Sonora semiannulata* B. & G.
Bicolor Ground Snake.
(Central and western Okla-
homa).
- GG. Preocular absent, eye bounded anteriorly by pre-
frontal and loreal. (Fig. 21).

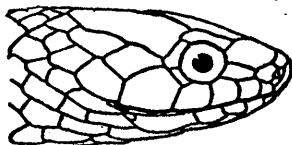


Fig. 21. (From Blanchard).

- H. Scale rows 17.
..... *Virginia valeriae elegans*
(Kennicott).
Virginia's Snake.
(Eastern Oklahoma).
- HH. Scale rows 13.
..... *Cerrophis amoenus vernalis*
(Kennicott).
Worm Snake.
(Eastern Oklahoma).
- FF. Loreal absent. (Fig. 22).

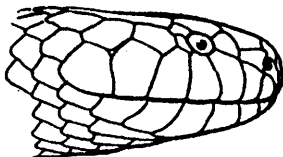


Fig. 22. (From Blanchard).

- G. Dorsal pattern of black, yellow, and red rings (black rings bordered on either side by yellow rings); grooved fangs present in anterior part of upper jaws.
 *Micrurus fulvius* (Linne).
 Coral Snake. (POISONOUS).
 (Extreme southeastern Oklahoma?).
- GG. No dorsal pattern; body uniformly colored above except head which may be darker; small grooved fangs present in posterior part of upper jaws.
 *Tantilla*.
- H. Head black; supralabials 7; ventrals 136 to 161.
 *Tantilla nigriceps* Kennicott.
 Sonoran *Tantilla*.
 (Western Oklahoma).
- HH. Head brown, only a little darker than body; supralabials 6; ventrals 111 to 133.
 *Tantilla gracilis* B. & G.
Tantilla.
 (Oklahoma).
- DD. Some or all of dorsal scales keeled. (Fig. 18).
- E. Anal plate entire. (Fig. 9).
- F. Scale rows 29 to 35.
 *Pituophis sayi* (Schlegel).
 Bull Snake.
 (Oklahoma).
- FF. Scale rows fewer than 29.
- G. Infralabials 5 to 7.
- H. Belly marked with two rows of black spots.
 *Tropidoclonion lineatum*
 (Hallowell).
 Striped Swamp Snake.
 (Oklahoma).

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HH. Belly not marked with spots.

- *Potamophis striatulus* (Linne).
Ground Snake.
(Eastern Oklahoma).

GG. Infralabials 8 or more.

- *Thamnophis*.
Garter Snakes.

H. Light stripe on anterior part of body on 3rd and 4th scale rows.

I. Tail usually more than 0.27 of total length; supralabials 8.

- *Thamnophis sauritus proximus*
(Say).
(Oklahoma).

II. Tail usually less than 0.27 of total length; supralabials 7 or 8.

- *Thamnophis radix* (B. & G.).
(Oklahoma).

HH. No light stripe on anterior part of body, or if present not on 4th scale row.

I. Light stripe on 3rd scale row only.

- *Thamnophis marcianus* (B. & G.).
(Western Oklahoma).

II. Light stripe on 2nd and 3rd scale rows, or all of 1st, 2nd, and 3rd rows light like belly.

J. Scale rows 21-19-17 or 19-21-19-17.

- *Thamnophis ordinoides elegans*
(B. & G.).
(Western Oklahoma).

JJ. Scale rows 19-17 or fewer.

K. Both rows of lateral spots distinct on skin; interspaces not generally red.

- *Thamnophis sirtalis sirtalis*
(Linne).
(Southeastern Oklahoma).

KK. Upper row of lateral spots fused on skin; interspaces red.

- *Thamnophis sirtalis parietalis*
(Say).
(Northern and central Oklahoma).

EE. Anal plate divided. (Fig. 10).

F. Loreal absent. (Fig. 24).

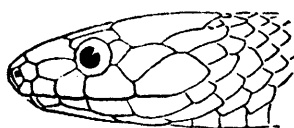


Fig. 23. (From Blanchard).

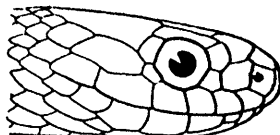


Fig. 24. (From Blanchard).

G. Scale rows 15.

..... *Storeria occipito-maculata*
(Storer).
Red-bellied Snake.
(Eastern Oklahoma?).

GG. Scale rows 17.

..... *Storeria dekayi* (Holbrook).
DeKay's Snake.
(Oklahoma).

FF. Loreal present. (Fig. 23).

G. Only one internasal. (Fig. 25).

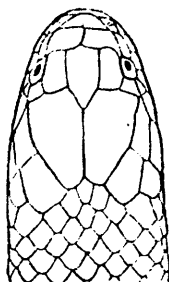


Fig. 25. (From Blanchard).

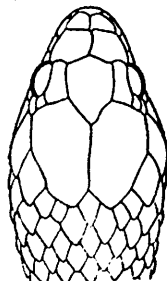


Fig. 26. (From Blanchard).

H. Supralabials 7 or 8; infralabials 8 to 10; scale rows 19 or 21.

..... *Farancia abacura* (Holbrook).
Horn Snake; Mud Snake.
(Southeastern Oklahoma?).

HH. Supralabials 5; infralabials 6; scale rows 17.

..... *Potamophis striatulus* (Linne).
Ground Snake.
(Eastern Oklahoma).

GG. Two internasals. (Fig. 26).

H. Preocular absent; loreal reaching eye. (Fig. 21).

- I. Supralabials 5; only one postocular.
 *Potamophis striatulus* (Linne).
 Ground Snake.
 (Eastern Oklahoma).
- II. Supralabials 6; postoculars almost always 2.
 *Virginia valeriae elegans*
 (Kennicott).
 Virginia's Snake.
 (Eastern Oklahoma).
- HH. Preoculars present, either 1 or 2. (Fig. 13).
- I. Scale rows 17; color grass green.
 *Ophedrys aestivus* (Linne).
 Rough Green Snake.
 (Oklahoma).
- II. Scale rows more than 17.
- J. Postoculars 2; scale rows 25 to 33; dorsal scales weakly keeled.
 *Elaphe*.
- K. General coloration very dark in adult (young specimens like *E. o. confinis*).
- L. Quite uniform black above; scale rows 25 or 27.
 *Elaphe obsoleta obsoleta* (Say).
 Pilot Black Snake.
 (Oklahoma).
- LL. Pattern of 30 to 35 dark blotches; scale rows 27 or 29.
 *Elaphe obsoleta confinis* (B. & G.).
 Black Snake.
 (Oklahoma).
- KK. General coloration light grayish or brown; dorsal blotches 39 to 48; ventrals 211 to 222.
 *Elaphe lacta* (B. & G.).
 Gray Rat Snake.
 (Oklahoma).
- JJ. Postoculars 3, if only 2 then scale rows only 19 or 23; dorsal scales strongly keeled.
 *Rhynchophis*.
 Water Snake.

K. Scale rows 19.

- L. One long median dark stripe on belly, or no markings (except on lateral ends of ventrals).

..... *Natrix grahamii* (B. & G.).
(Eastern Oklahoma).

- LL. Two long dark stripes on middle of belly, at least anteriorly.

- M. Ventrals lateral light stripes present.

..... *Natrix septemvittata* (Say).
Moon Snake; Queen Snake;
Striped Water Snake.
(Eastern Oklahoma).

- MM. No ventro-lateral light stripes present.

..... *Natrix rigida* (Say).
(Southeastern Oklahoma).

KK. Scale rows more than 19.

- L. Scale rows 23 to 25; infralabials usually 10.

- M. No light line obliquely backwards from eye; ventrals 135 to 155.

- N. Belly usually with numerous black-edged half circles; lateral spots not alternating with dorsal spots as far forward as the head; scales usually in 23 rows.

..... *Natrix sipedon sipedon*
(Linne).
(Eastern Oklahoma south to
Red River).

- NN. Belly immaculate or with dusky mottlings chiefly on the antero-lateral ends of ventrals; lateral spots alternating with dorsal spots as far forward as the head; scales usually in 25 rows.

..... *Natrix sipedon transversa*
(Hallowell).
(Southern Oklahoma).

MM. A light line from eye obliquely to angle of mouth; ventrals 123 to 135.

..... *Natrix fasciata confluens*
Blanchard.

(Southern Oklahoma).

LL. Scale rows 25 to 31, usually 27; infralabials usually 11 to 13.

..... *Natrix rhombifera*
(Hallowell).

(Southern Oklahoma).

GLOSSARY

Anal plate.—The large plate just in front of the anus; it may be either a single plate or divided into two plates.

Anterio-lateral.—That part of the side of the body (or ventral plate) which is near (or toward) the head.

Anterior.—Toward the head of an animal.

Caudals.—The plates beneath the tail; those ventral plates posterior to the anal plate.

Dorsal.—Pertaining to the back of an animal's body.

Dorsals.—The scales on the body of a snake except the large plates covering the belly; really including the lateral as well as the strictly dorsal scales.

Entire.—Undivided; a single plate or scale.

Infralabials.—Same as lower labials; those plates covering the lower lips.

Internasal.—A plate or a pair of plates on the top of the head between the nasal plates.

Juvenile.—Not fully developed; young or immature.

Keeled.—With a ridge like the keel of a boat; this is almost always along the middle of a scale and extends longitudinally.

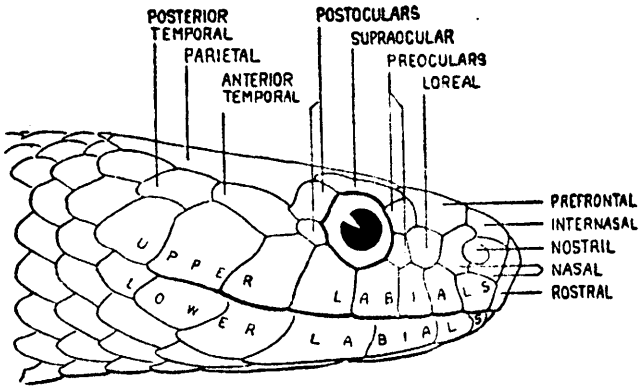
Lateral.—Pertaining to the side of the body or of any part.

Loreal.—A plate on the side of the head normally between the posterior nasal plate and the preoculars. (See definition of preocular).

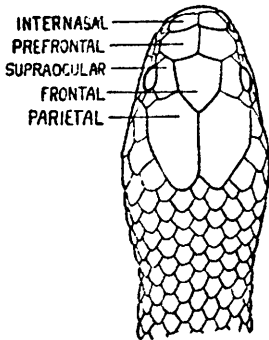
Lower labials.—Same as infralabials.

Nasal.—The plate or plates bounding the nostril. If two plates bound the nasal opening (nostril) then the anterior one is called the anterior nasal and the posterior one the posterior nasal.

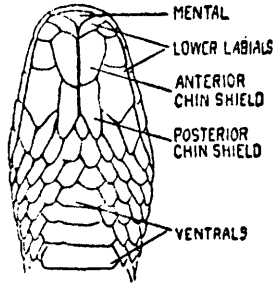
Parietals.—Those plates on the top of the head just behind the frontal and supraoculars; usually the most posterior (last) pair of large plates on top of head.



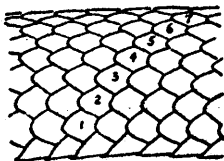
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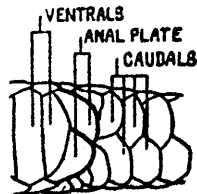
B



C



D



E

Posterior.—Toward the tail of an animal.

Postoculars.—Those head plates just behind the eye.

Postparietals.—Plates occasionally found on top of the head just behind the parietals.

Postsuperciliary.—Behind the superciliary plate.

Prefrontals.—A pair of plates on top of the head between internasals and frontals.

Preoculars.—The small scales or plates on the side of the head just in front of (anterior to) the eye. If a scale occupies this position and is much elongate it is the loreal and the preocular is in this case absent. (Fig. 23).

Rostral.—The most anterior plate on the head; the plate on the very end or tip of snout.

Scale rows.—The longitudinal series of dorsal scales. These are counted *obliquely* (Pl. IV-D). When the number of scale rows is stated, the maximum number is understood; by the maximum number we mean the number of rows slightly in front of the middle of the body (not including tail). It is well to make two or three counts of the scale rows at varying distances anterior to middle of body (but not as far forward as the neck). The highest number thus counted (usually an odd number) is what is meant by number of scale rows in this key. If a formula is given such as "scale rows 21-19-17", then the highest number as defined above is 21 (in this example). A little distance posterior there are 19 scale rows and then 17 posterior to this.

Superciliary.—Those plates just above the eye.

Supralabials.—Same as upper labials; those plates covering the upper lips.

Supraoculars.—Those plates on the top of the head between the frontal and the eyes.

Tail.—That part of the snake posterior to the anus.

Temporals.—Those plates on the head just behind the postoculars and between the parietals and supralabials.

Ventrals.—The plates or scales on the belly; usually transversely elongate.

Ventro-lateral.—Pertaining to the region on the side of the body near the belly.

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