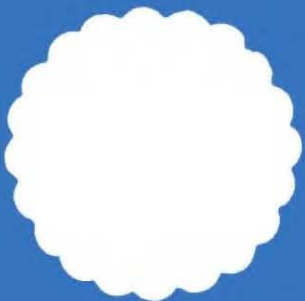
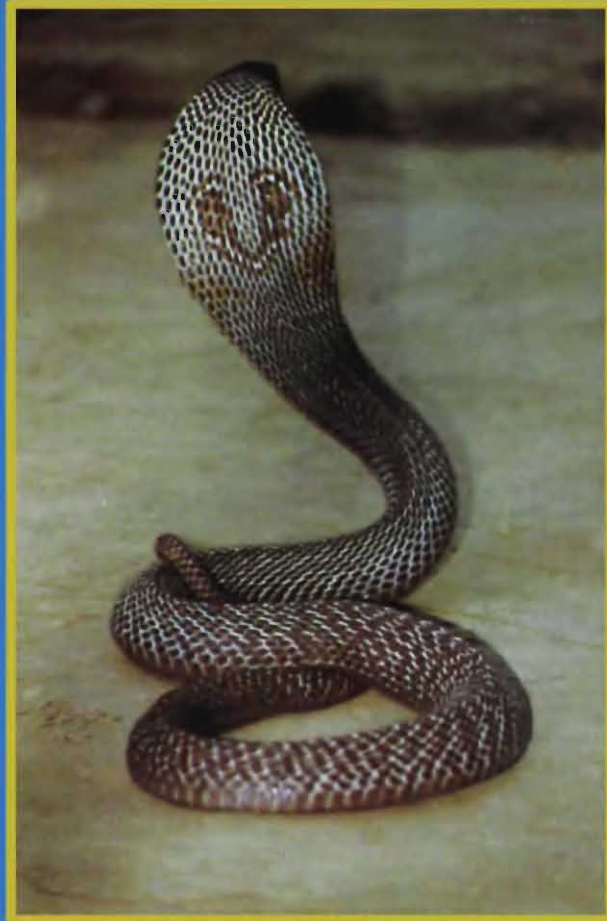


# *Fauna of India*



**REPTILIA**

**Serpentes**

Volume-III

**R. C. SHARMA**

The present Fauna of India Volume-III deals with Serpents is the third and last volume of the Group. This book contains status of 326 species and subspecies of the suborder Serpentes distributed in 87 genera and 11 families with valid scientific names.

This volume explains the complete account of taxonomic work of all the species and subspecies of snakes of India and adjacent areas *viz*; Pakistan, Nepal, Burma (Myanmar), Bhutan, Bangladesh and Sri Lanka. Habit and habitats, status, conservation and captive breeding of the selected species, ecology, distribution and zoogeography is also explained in this volume, with the line drawings.

**FAUNA OF INDIA  
AND  
THE ADJACENT COUNTRIES**

**REPTILIA  
Volume-III  
(SERPENTES)**

**R. C. SHARMA**

*Desert Regional Station, Zoological Survey of India, Jodhpur*

*Edited by the Director, Zoological Survey of India, Kolkata*



**Zoological Survey of India  
Kolkata**

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## **FOREWORD**

As per the objectives of Zoological Survey of India, several groups of animals were included in the earlier Volumes of Fauna of British India Series (presently the Fauna of India Series). The present one forms Volume Three of the Fauna of India, Reptilia and includes the account on Snakes. This faunal work will certainly serve useful purpose as it gives a comprehensive taxonomic account of all the snakes of the Indian Region along with their phylogeny, geographical distribution, zoogeography, habits, habitats, status, conservation and captive breeding. A total of 326 species and subspecies of the suborder Serpentes distributed in 87 genera and 11 families.

Dr. R. C. Sharma has already completed the faunal work on Testudines, Crocodylians and Lizards in two previous volumes.

July, 2007  
Kolkata

**Dr. Ramakrishna**  
*Director-in-Charge*  
*Zoological Survey of India*

## **PREFACE**

Since the publication Malcolm Smith's "The Fauna of British India Reptilia and Amphibia", in 3 Volumes (1931-1943), the taxonomic research and related knowledge in the subject has increased considerably. This warranted me to rewrite the complete Reptilia fauna of the Indian Region. I have already completed the work on Testudines and Crocodilians in Volume one and on Lizards in Volume two. The present book is the third in the series and deals with the detailed general introduction on snakes, covering briefly all the possible details and description of the characters and the systematic accounts of 87 genera and 326 species and subspecies belonging to 11 families. This faunal work apart from providing an up to date and complete taxonomic account of all the species and subspecies known from the Indian Region, which for the present Volume includes India, Pakistan, Nepal, Burma, Bhutan, Bangladesh, and Sri Lanka, sufficient information on biology, ecology, distribution, zoogeography, habits and habitats, status, conservation and captive breeding of numerous species has also been given in this book. The work is well illustrated with the line drawings of important structures. I hope this book will serve as an important tool to specialists, research students and naturalists in India and abroad interested in the fascinating study of colourful Indian Snakes.

**R. C. Sharma**

*Desert Regional Station  
Zoological Survey of India  
Jodhpur*

May, 1999

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## INTRODUCTION

During the course of studies in the last 38 years, I have come to the conclusion that many of the species of snakes described by Malcolm Smith (1943) have been relegated to synonymy and many of them had to be given a different rank. In this work most of the species have been written again with better taxonomic arrangements as per the advances during the last 55 years. Most of the keys for identification have to be simplified. Changes were thought to be essential in dealing with the number of the families, subfamilies and genera. Following are the few points which are worth mentioning.

Since the publication of Malcolm Smith's volume on Snakes, no comprehensive taxonomic work has been published although a number of papers have already appeared on nomenclature, faunistic surveys, description of new species and sub-species, monographs on various genera of snakes, distribution, habits and habitats, bionomics, food and feeding behaviour, reproduction, various aspects of ecology and biology. Works worth to be mentioned are of Minton (1962 and 1966), Mertens (1969, 1970, 1971 and 1974) on the snakes of Pakistan; Deraniyagala (1955), Taylor (1947, 1950 and 1953) on the snakes of Sri Lanka; Swan and Leviton (1962) on the snakes of Nepal; Sharma (1964 - 1987) on the snakes of various parts of India; Murthy (1966-1987) on the snakes of South India.

### Family TYPHLOPIDAE and LEPTOTYPHLOPIDAE

Further intensive study on the material of families Typhlopidae and Leptotyphlopidae was required in order to designate the true status of the numerous species of genus *Typhlops*. Many workers like Hass (1959, 1964), Dunn and Tihen (1944), Tihen (1945), Smith and Warner (1948), Smith (1949), Evans (1955), Robb (1960), Fox and Dessauer (1962), Fox (1965), Robb and Smith (1966) and Orejas-Miranda (1970) has done considerable studies on these aspects of family Typhlopidae and allied material but plenty of confusion still prevails and a through revision is absolutely essential.

Redescription of the known species with proper illustrations and suitable keys are necessary for ascertaining the exact taxonomic status.

### Family UROPELTIDAE

The material of the genera like *Uropeltis*, *Pseudotyphlops*, *Rhinophis*, *Silybura*, *Pseudoplectrurus*, *Plectrurus*, *Melanophidium* and *Platyplectrurus* have been studied again in all the possible details and taxonomic status of numerous species has been redesignated. Malcolm Smith merged the genus *Pseudoplectrurus* in *Plectrurus* in

spite of the marked morphological differences and recognised only six genera established by Boulenger. Smith merged and recognised only six genera established by Boulenger. Smith merged and recognised only six genera established by Boulenger. Smith merged *Brachyophidium rhodogaster* and *Plectrurus sanguineus* in genus *Teretrurus*. I cannot recognise this genus *Teretrurus* erected by Beddome and the two species mentioned above differ drastically from each other in characters that to include them in a common genus seems to me as a vague idea and hardly with any justification. Numerous such confusion examples exist in the species of genera like *Rhinophis*, *Uropeltis* and *Pseudoplectrurus*.

#### Family ANILIDAE

According to Mahendra (1984) only one species, *Cylindrophis maculatus* is a stable species, with two sub-species i.e. *C. maculatus maculatus* and *C. maculatus rufus* and the sub-species *C. rufus burmanus* erected by Malcolm Smith is a synonym of *C. maculatus rufus*. I do not agree with this idea and both the species *Cylindrophis rufus* and *Cylindrophis maculatus* are the stable species and *C. rufus burmanus* has been correctly designated by Smith.

#### Family XENOPELTIDAE

The Family is represented by a single species *Xenopeltis unicolor*, which has been redescribed with better illustrations and detailed taxonomic data.

#### Family BOIDAE

All the species have been redescribed with better illustrations and data on the taxonomic variations, reproduction, natural history, distribution, sexual dimorphism, habits and habitats and current status.

#### Family COLUBRIDAE

Changes were most essential, even at the sub-family level. The whole family now includes 5 sub-families only namely Homalopsinae, Xenoderminae, Elachistodontinae, Dasypeltinae and Colubrinae as sub-family Acrochordinae has been given the status of a family—Acrochordidae.

Sub-family Acrochordinae has to be given the status of a family—Acrochordidae.

Critical studies were undertaken for ascertaining that whether sub-family Dipsadinae can be given the status of a full family Amblycephalidae. Boulenger (1890, 1896) and Pope (1935) regarded Amblycephalidae as a separate family distinct from Dipsadidae of central and south America but Malcolm Smith, combined the two into a sub-family Dipsadinae of the family Colubridae. I agree with the ideas of Smith

as the differences are not sufficiently enough to demarkete Amblycephalidae as an independent family.

Two species of large colubrid snakes previously included by Malcolm Smith in genus *Coluber* have now been shifted to the genus *Sphalerosophis* by Marx (1959). Indo-Pakistani populations of the genus *Sphalerosophis* display confusing variations and further studies have been carried out to designate the true status of the material in question.

The species of genus *Contia* have been shifted to the genus *Eirenis* by Stickell (1957). Further studies in the accumulated material was proved useful in ascertaining the true taxonomic status of the concerned species.

The detailed study on the material of the genus *Oligodon* has been carried out. I do not agree with Mahendra (1984) in raising the status of genus *Oligodon* of Smith's fauna of the sub-family Oligodontinae.

All the 9 species of snakes included by Smith in genus *Ahaetulla* have been shifted to the genus *Dendrelaphis* as per the opinion No. 524 of International code of Zoological nomenclature. On the result of a revisionary study all the species have been redescribed with proper illustrations and taxonomic details. During the course of time of 47 years one new species *D. humayani* has also been described.

Species of the genera like *Chrysopelea*, *Lycodon*, *Cercaspis*, *Dinodon*, *Dryocalamus*, *Sibynophis*, *Balanophis*, *Pseudoxenodon*, *Atridium*, *Trachischium*, *Plagiopholis*, *Rhabdops*, *Opisthotropis*, *Aspidura*, *Blythia*, *Haplocercus*, *Xylophis*, *Boiga*, *Psammophis*, *Psammodynastes*, *Enhydris*, *Homalophis*, *Gerardia*, *Fordonia*, *Cantoria*, *Bitia* and *Herpeton* of Malcolm Smith (1943) have been further studied and are redescribed. Several new species have also been described under many of the above mentioned genera, which have been included in the latest faunal work.

Malnte (1960) separated the 25 species of genus *Natrix* given in the work of Smith and placed them in five genera namely *Rhabdophis* (7 species), *Amphisma* (13 species), *Fowlea* (1 species), *Xenochrophis* (2 species) and *Natrix* (3 species).

The material of the genus *Tarbophis* of Malcolm Smith is now regarded in the genus *Telescopus*. Further detailed studies and redescription of the species has been done.

All the 7 species of *Dryophis* of Malcolm Smith have now shifted to the genus *Ahaetulla* according to the opinion 524 of International commission of Zoological nomenclature. The complete material have been studied and redescribed again.

Genus *Elachistodon* has been placed in a separate sub-family Elachistodontinae instead of keeping the material in the family Dasypeltidae. Malcolm Smith regarded these snakes as true egg eaters and placed them together with the African egg eating snakes of the genus *Dasypeltis*. There are striking differences between the two genera *Elachistodon* and *Dasypeltis* and these cannot be placed together in a common family.

### Family ELAPIDAE

The material of *Bungarus caeruleus* from Sind (Pakistan), Rajasthan (India) and Andamans have been studied in more details. This has proved that *Bungarus sindanus* and *Bungarus andamanensis* are the distinct species. Plenty of findings have been added in the descriptions of the species of genera like *Bungarus*, *Ophiophagus*, *Callophis* and *Naja*, relating to their habits, morphology and distribution.

### Family HYDROPHIIDAE

Complete revision of the whole family has been done in the light of recent advances in the subject. McDowell (1972) and my personal observations on the various genera like *Microcephalophis*, *Hydrophis*, *Praescutata*, *Lapemis*, *Distira*, *Astrotia* and *Enhydrina*, fully support this idea. There is an urgent need to divide various genera into subgenera. The detailed studies on the Hemipenis of Hydrophiidae has proved most useful in establishing their exact taxonomy.

### Family VIPERIDAE

Further studies on the species of genera like *Azemiops*, *Vipera*, *Echis*, *Pseudocerastes*, *Eristocophis* and *Trimeresurus* have been done in the light of recent findings (on account of availability of more material from new localities).

The use of the genus *Ancistrodon* has been discarded and all its 6 species have been merged in the genus *Agkistrodon*. The complete related material have been studied and all the species have been described again by giving detailed keys and suitable illustrations.

All the identified snakes and the type material available in Zoological Survey of India, Calcutta have been examined in all the possible details. At many occasions the material including the types was borrowed from other Institutions for study and comparison. Large number of faunistic surveys were conducted by the Zoological Survey of India in different parts of Indian region during the last 52 years after the publication of Smith's fauna of snakes, which further initiated the elaborate studies on the various species of snakes, covered in this work. Type localities were studied once again, topotypes of various species were collected and related ecological and biological observations were recorded on the various less known species viz. *Typhlops ostepsi* Boulenger, *Typhlops bothriorhynchus* Gunther, *Typhlops oligolepis* Wall, *Typhlops andamanensis* Stoliczka, *Melanophidium bilineatum* Beddome, *Xenopeltis unicolor* Reinwardt, *Coluber gracilis* (Gunther), *Opheodrys doriae* (Boulenger), *Liopeltis stoliczkae* (Sclater), *Coronella brachyura* (Gunther), *Oligodon erythrogaster* Boulenger, *Dendrelaphis caudolineolata* (Gunther), *Lycodon flavomaculatus* Wall, *Dryocalamus gracilis* (Gunther), *Sibynophis sagittarius* (Cantor), *Amphiesma xenura* (Wall), *Amphiesma monticola* (Jerdon), *Elachistodon westermanni* Reinhardt, *Bungarus*

*bungaroides* (Cantor), *Bungarus niger* Wall, *Bungarus lividus* Cantor, *Bungarus walli* Wall, *Callophis beddomei* Smith, *Ophiophagus hannah* (Cantor).

The total duration of the surveys done by myself alone is of 645 days and I was lucky enough to collect large number of reptiles from Maharashtra, Orissa, Rajasthan, Madhya Pradesh, Gujarat, West Bengal, Goa, Karnataka, Tamil Nadu, Pondicherry, Kerala, Jammu and Kashmir, Andamans, complete Ganga-Yamuna river system of Uttar Pradesh, Bihar and Bengal, complete river systems of Mahanadi, Godavari, Krishna and Kaveri, Assam, Arunachal Pradesh, Meghalaya, Manipur, Himachal Pradesh, Tripura and Nagaland.

The following faunistic surveys were also proved to be useful in finalising this faunal work. Imphal survey, 1945 by Dr. M. L. Roonwal; West Himalayan survey, 1950 by Zoological Survey of India and Punjab University; Chota Nagpur Survey, 1954 by Dr. A. P. Kapur; Orissa survey, 1955 by Zoological Survey of India; Rajasthan Survey, 1957 by S. D. Gupta; Assam survey, 1960 by S. N. Prasad; Rajasthan desert survey, 1956 & 1960 by B. Biswas; Cherrapunji (Assam) survey, 1959 by M.L. Roonwal & A.P. Kapur; Andaman and Nicobar survey, 1959 by K.K. Tiwari; Little Andaman survey, 1961 by Zoological Survey of India; Rajasthan survey, 1957-58 by K.K. Tiwari; Sambhar Lake (Rajasthan) survey, 1958 by T.G. Vazirani; Manali and Lahul valley survey 1958 by T.D. Soota; Sikkim expedition, 1959 by A.G.K. Menon; Uttar Pradesh survey, 1956 by H. Khajuria; Assam survey, 1956 by B.K. Tikader; Poona and Mysore survey, 1960 by M.B. Kriplani; Western Rajasthan survey, 1962 by P.D. Gupta; South eastern Rajasthan survey, 1963 by N. Majumdar and R.N. Bhargava; Rajasthan survey, 1963 by K.K. Mahajan; Andaman and Nicobar survey, 1964 by B.S. Lamba; Bhutan & Sikkim survey, 1962 by G. Ramakrishna; Nagar Junasagar surveys, 1962 and 1963 by B. Nath; Rajasthan survey, 1964 by K.K. Mahajan; Poona and adjoining districts survey, 1964 by R.C. Sharma; Jammu survey, 1964 by Raj Tilak; Western Ghat survey, 1965 by T.G. Vazirani; Southern Rajasthan survey, 1965 by S. Biswas; Pondicherry and Karaikkal survey, 1958 by A.G.K. Menon; Rampur and Garhwal survey, 1958 by B.S. Lamba; Madras survey, 1965 by J.K. Sen; Goa survey, 1969 by R.C. Sharma; Chilka Lake survey, 1969 by K.N. Nair; Orissa survey, 1971 by A.K. Mondal; Bhutan survey, 1966 by B. Biswas; Great Nicobar expedition, 1966 by A. Daniel; Orissa surveys, 1971 and 1972 by S. Khera, P.K. Talwar, J.M. Julka, J.K. Sen, P.K. Maity, K.V. Surya Rao and D.P. Sanyal; Andaman and Nicobar survey, 1970 by B.K. Tikader; Daphabum expedition, 1969-70 by J.M. Julka; Kakdip and Bakkahali survey, 1975 by S.K. Talukdar; Orissa survey, 1975-76 by D.P. Sanyal; Andaman and Nicobar survey, 1972 by A.K. Mukherjee; Jammu and Kashmir survey, 1975 by Chakraborty; Sikkim-Darjeeling survey, 1976 by C.B. Srivastava; Orissa survey, 1977 by N. Majumdar and Jammu and Kashmir survey, 1977 by R.C. Sharma.

As a result of the above surveys a tremendous task for the proper assessment of the regional reptile fauna could be possible and the studies augmented the knowledge on taxonomy, exact distribution, variations, habits and habitats, life history, ecology, phlogeny and status of these secretive creatures.

In this work general norms of systematics have been followed and the law of priority has been strictly maintained while describing a taxa. Trivial names have been used only for the well established taxa.

Vernacular names have been used for those species which are most common and known thoroughly in a large area. The essential synonymy has been given for each species as far as possible. All the references relevant to the text have been given and fully serve the purpose of the future worker. The general pattern of the scientific names in the text and synonymy, type locality and the place where type is located, arrangement of the names of the authors and the general pattern of description of a taxa is almost on the same pattern as followed by Smith. A comma between a scientific name and the author's name is used for a reference subsequent to the original description of the taxa.

### **PROGRESS OF KNOWLEDGE IN THE REGION**

The beginning of studies of herpetology in Indian Subregion dates back as early as middle of nineteenth century and the first consolidated work was published by Dr. A. Gunther in the year 1864, "The Reptiles of British India" The various Indian and Indo-chinese herpetologists, who made outstanding contributions in the various fields are Theobald 1876 (Descriptive catalogue of the reptiles of British India); Boulenger 1882 - 1920. The Fauna of British India Reptilia and Batrachia; Russell Patrick 1796 - 1809 (An account of Indian serpents collected on the coast of coromandal and other parts of India); Hardwicke 1756-1835 (Drawings of reptiles and amphibians); Hamilton, Francis 1762 - 1829 (Sketches of reptiles); Reeves, John 1774 - 1856 (Sketches of Chinese reptiles); Hodgson 1800-1894 (Sketches of reptiles and amphibians); Cantor, Thomas Edward 1836-1847 (Catalogue of reptiles inhabiting the Malayan Peninsula and Islands); Blyth, E. 1853-1855 (Descriptions on various Indian reptiles); Jerdon, Thomas 1853 (Catalogue of reptiles inhabiting southern India); Blanford, W.S. 1870 -1879 (Notes on some reptilia and amphibia from central India, Notes on a collection of reptiles and frogs from the neighbourhood of Ellore and Dumaguden); Fayrer, J. 1874 (Thantophidia of India); Theobald, W. 1868-1876 (Catalogue of reptiles in the museum of the Asiatic society of Bengal, Descriptive catalogue of the reptiles of British India); Beddome, R.H. 1862-1886 (Numerous papers on the snakes and lizards of Peninsular India); Anderson, J. 1871-1879 (Notes on various Indian Testudines; Anatomical and Zoological researches and Zoological results of the Yunnan expeditions on reptilia and amphibia; on some Indian reptiles; on some Persian, Himalayan and other reptiles; A list of the reptilian accessions to the Indian Museum, Calcutta); Stoliczka, F. 1868-1873 (Fifteen papers on reptiles and ambhíbians of India, Malaya, Burma, Sind, Andaman and Nicobar Islands); Ferguson, H. 1891 - 1903 (Distribution of Indian crocodile, A new tortoise from Travancore; Travancore snakes; Kelaart, E.F. 1852 (Prodromus Faunae Zeylanicae; contributions to the Zoology of Ceylon); Sclater, W.L. 1891 (List of snakes in the Indian Museum, Calcutta; Notes on a collection of

snakes in the Indian Museum with description of several new species); Annandale, N. 1906–1921 (Numerous papers on herpetology of India, Nepal, Ceylon, western Himalayas, Burma, Borneo, Andamans and Nicobar Islands); Flower, S. 1899 (Notes on the reptiles of Malaya Peninsula and Siam); Wall, F. 1897–1926 (Numerous papers on the snakes of the complete Indian subregion) and Malcolm Smith made enormous contribution in the growth of knowledge of herpetology mainly concerning the Indian and Indian-chinese subregions. He was an amazingly prolific writer and possessed the deep knowledge of the subject. His main work comprises the studies of the 742 species of crocodylians, testudines, lizards and snakes distributed in three volumes entitled as “The Fauna of British India Ceylon and Burma” published between 1931 and 1943. Smith’s earlier work was deeply influenced by Boulenger, but he soon developed various other interests, especially in the zoogeography, structure and life-history of amphibians and reptiles. He wrote over 120 other books and articles and his “British Amphibians and Reptiles” is a most interesting and widely read book. Smith was the main founder of the British Herpetological Society. Mahendra, B.C. 1983 (Hand book of the snakes of India, Ceylon, Burma, Bangladesh and Pakistan). In addition to the above works some of the following researches on the regional reptiles are worth recognition also.

Deoras, P.J. (1983) published a book on Indian snakes; Ghorpurey, K.G. (1954) written a book on the snakes of India; Inyer, R.F. and Clark, P.J. (1983) published a paper giving an elaborate account of genus *Colubur*, Mertens, R. (1954 - 1959) published many papers on reptiles of Pakistan including the snakes; Minton, S.A. (1966) published a detailed account on the reptiles of Pakistan including the snakes; Murthy, T.S.N. (1990) published a snake book of India; Sharma, R.C. (1964 - 1994) published many papers on Indian reptiles including the snakes, Stickel, N.H. (1951) published a very good paper showing the distinction between the snake genera *Contia* and *Eirenis*; Swan, L.W. and Leviton, A.E. (1962) published a very good paper on the herpetofauna of Nepal; Tiwari, K.K. and Biswas, S. (1973), published a paper on the reptiles of Great Nicobar Islands and Tiwari, K.K. and Sharma, R.C. (1970), published a paper on the reptiles of Western Maharashtra.

## GENERAL ACCOUNT AND SNAKE FAMILIES

The idea of a creature with creeping zig-zag motion shining, agile cold body immediately puts a wave of fear and repulsion in our mind. This is nothing except an animal generally known as Snake. At present 3272 species, 357 genera and 12 families of snakes are present, almost in all regions of the world except Artics, New Zealand and Ireland. Snakes have adapted to the most varied and diverse ecological conditions and have predominantly colonized the warmer, densely vegetated areas of the tropics. Indian region is also having numerous colourful species of fascinating snakes, ranging in size from 100 mm. worm snakes to 6 metre long pythons. In this region of the 326 known species of snakes about 103 are partly or wholly poisonous.

These species comprise capable swimmers, fast runners, accomplished burrowers, tree dwellers and perfect gliders. They exhibit remarkable arboreal, scansorial (climbing), saltatorial (Fossorial or burrowing), cursorial (running), aquatic (swimming) and volant (flying or gliding) adaptations. Snakes like lizards show remarkable divergence in characters from a focal terrestrial stock and have become subjected to various adaptive radiations. Snakes can be defined as exothermic (poikilothermic), secretive, diurnal or nocturnal, carnivorous, vertebrates belonging to the suborder Serpentes of Order Squamata of Class Reptilia. These repulsive creatures are characterised by having greatly elongated body and tail of moderate and variable length; devoid of limbs and girdles, except in Pythons and Boas where vestiges of pelvic girdle and hind-limbs are present; body is covered with overlapping scales which are not granular (Figs. 1-4); eyelids are fused and form a transparent spectacle over the eye; snakes are absolutely devoid of external ear opening and tympanum; urinary bladder is not present; the rami of mandible are united by extremely elastic tissues without forming any symphysis, the articulation of two rami of a mandible in snakes is known as an intermandibular zone of weakness and bears a great significance in the taxonomy of snakes (Fig. 5); teeth are sharp and pleurodont (set in a groove on the inner side of the jaw bone), recurved and are replaced from time to time; teeth

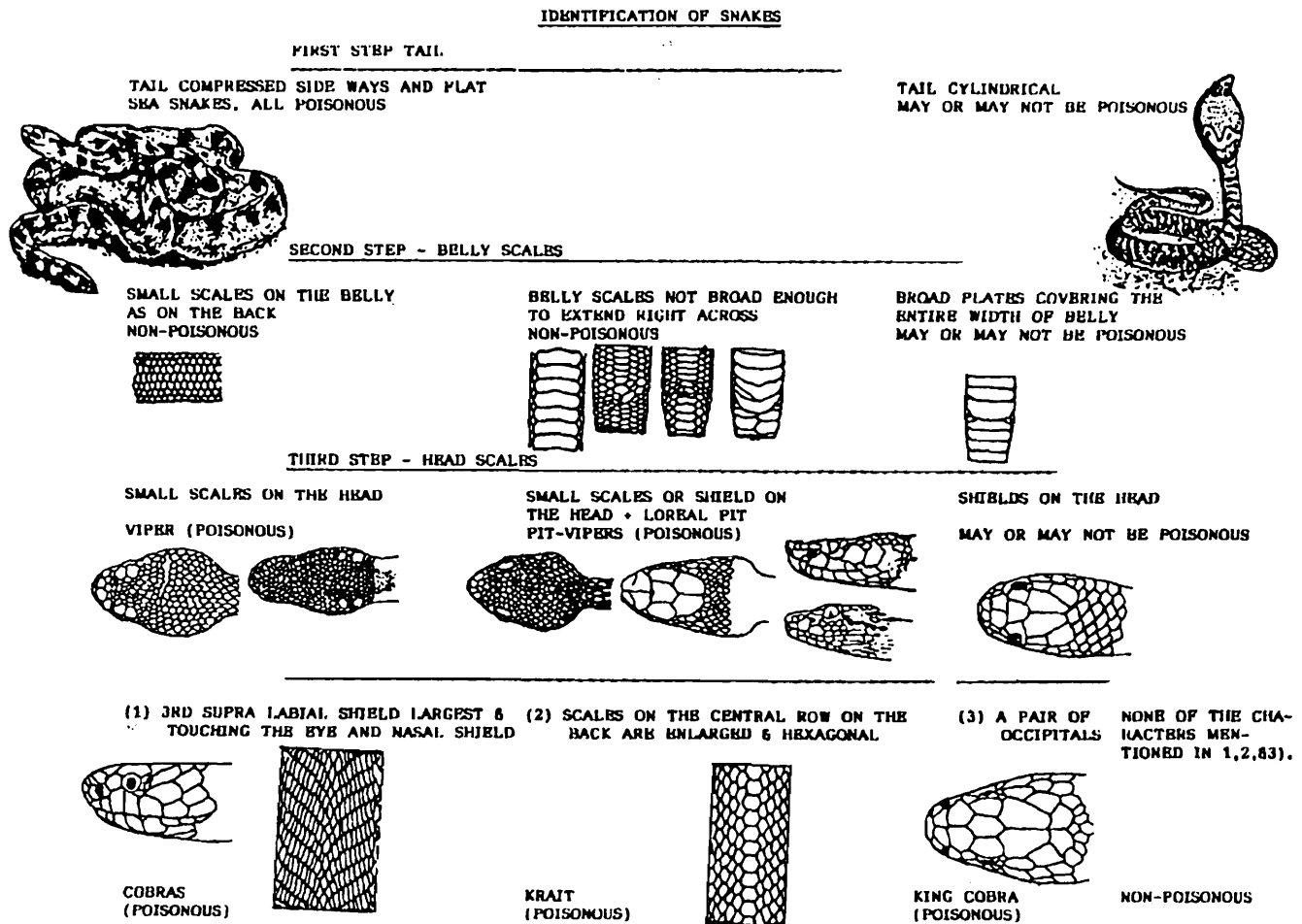
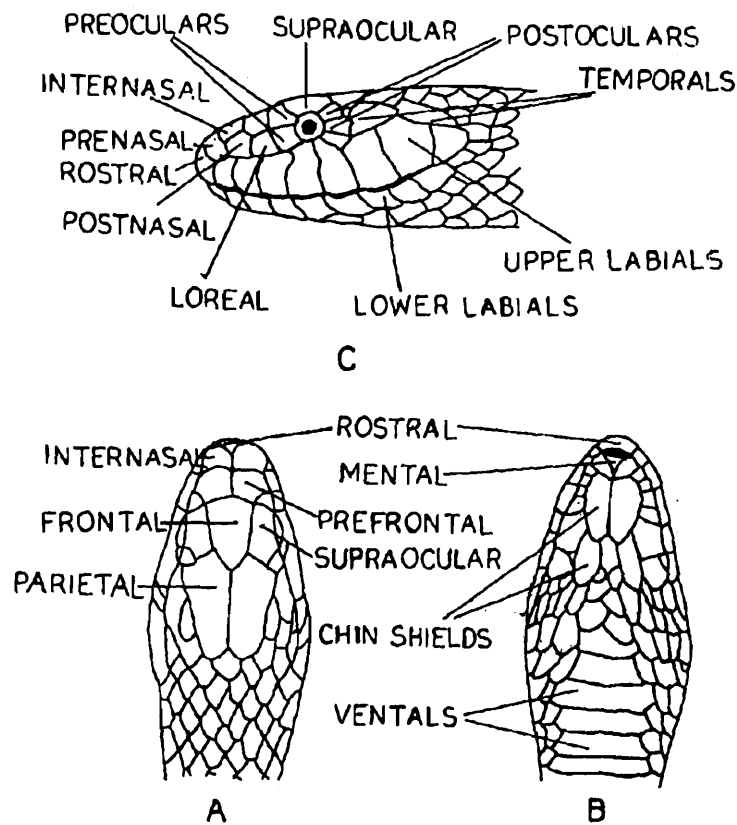
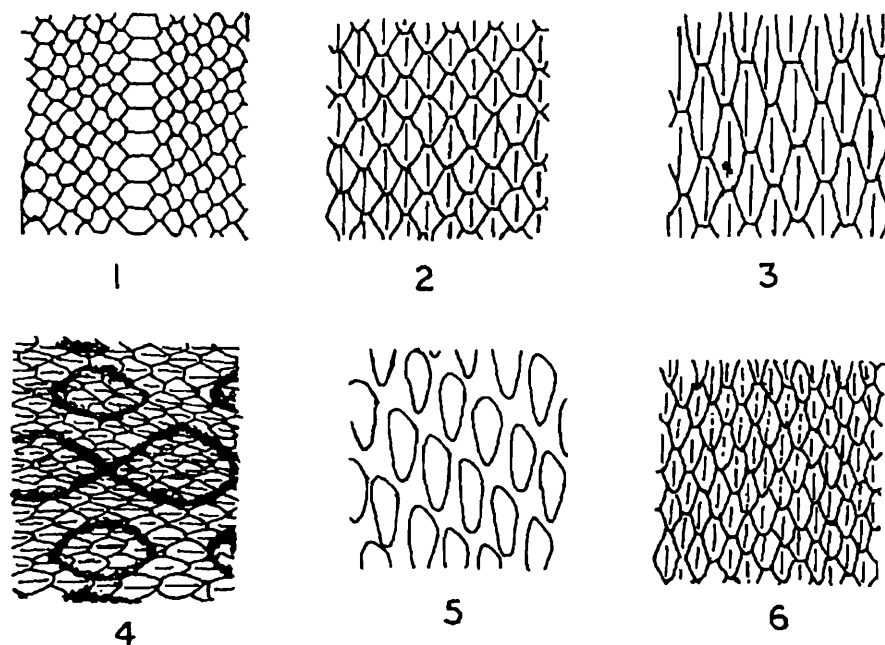


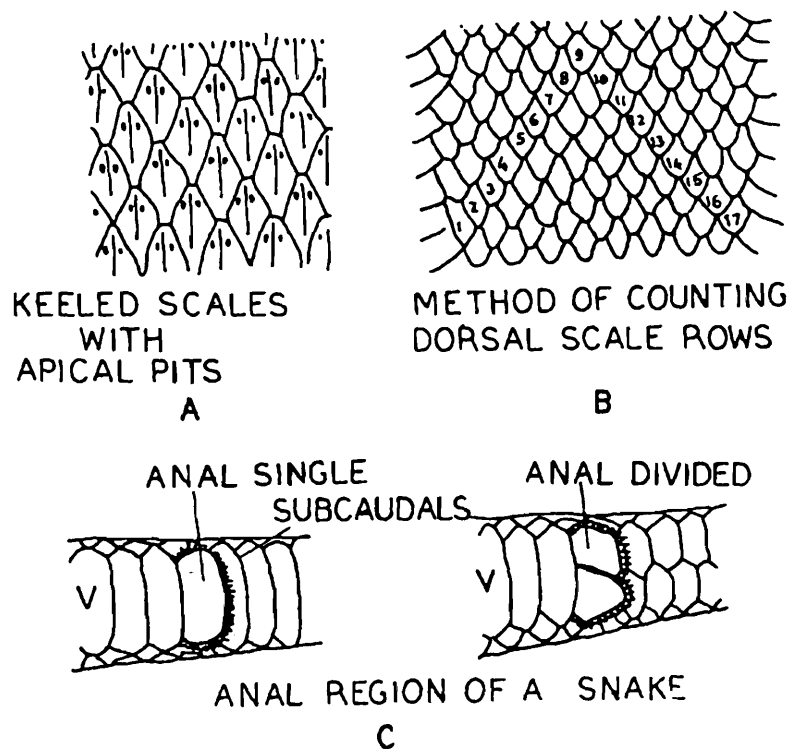
Fig. 1. Identification chart of snakes.



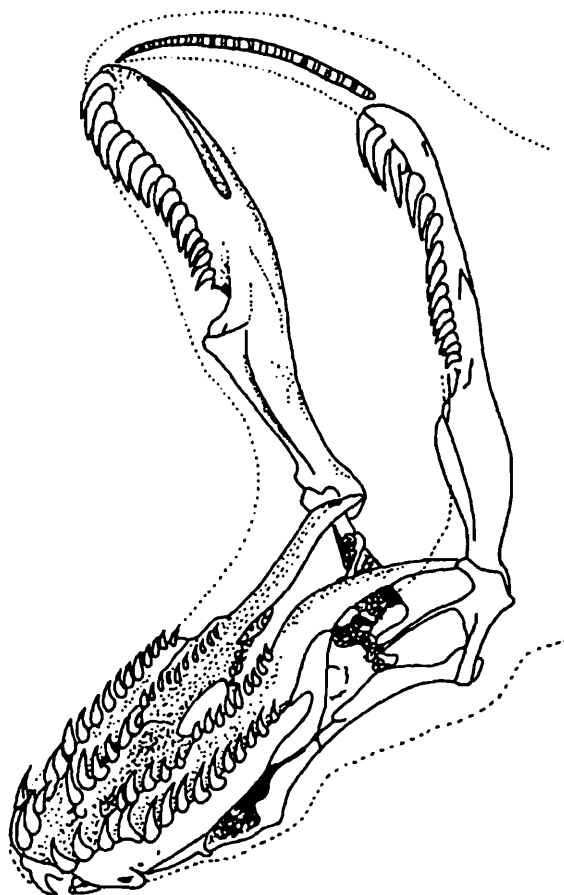
**Fig. 2.** Head scales of a snake. (A) Dorsal view (B) Ventral view (C) Lateral view.



**Fig. 3.** Scales on the dorsal aspect of a snake, (1) Central Vertebral row of scales which are big and hexagonal, about two times larger than the adjacent scales (found in Kraits). (2) Oblong scales with a line as found in rat snakes. (3 and 4) Semi-elliptical scales with a line in the centre as found in Russell's viper. (5) Rhomboid scales with space in between as found in cobra. (6) Overlapping elliptical scales with serrated lines like a saw seen behind the head as found in *Echis carinatus*.

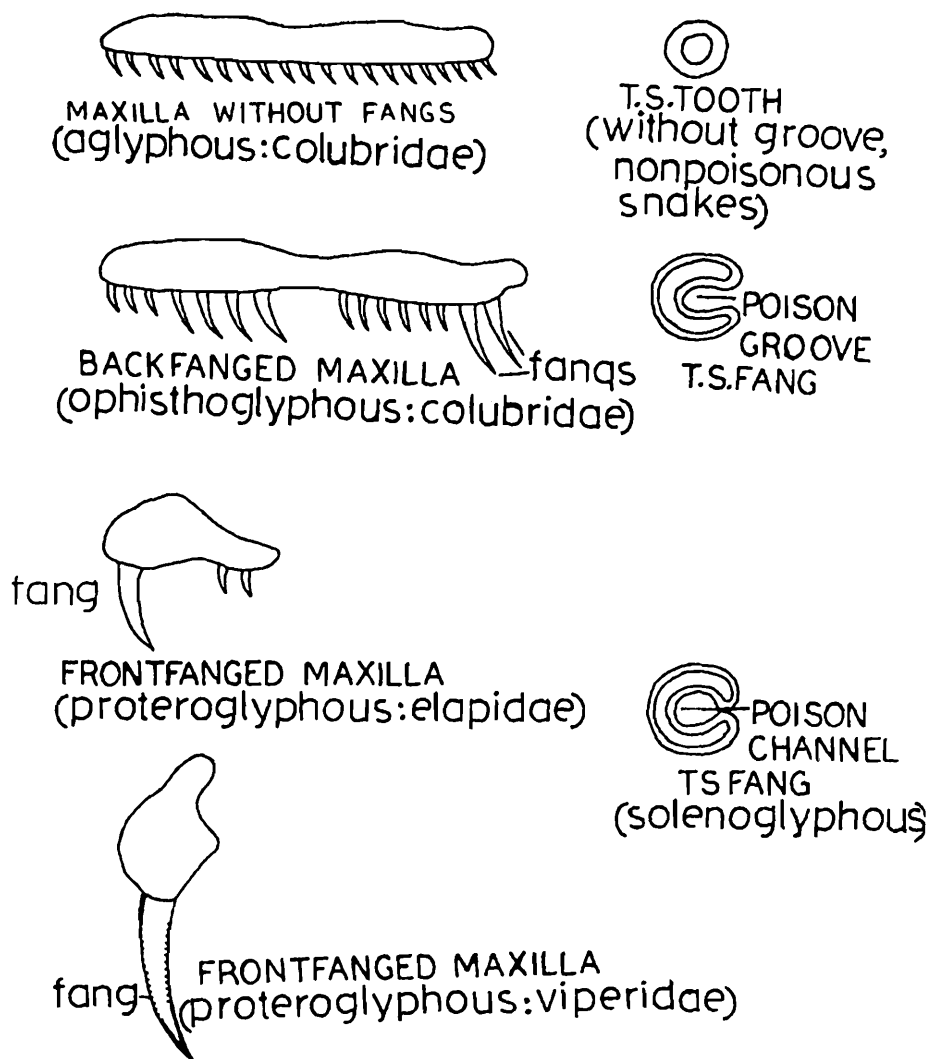


**Fig. 4.** Scales in snakes. (A) Keeled scales with apical pits. (B) Method of counting dorsal scale rows. (C) Anal region of a snake.



**Fig. 5.** Cranial Kinesis during opening of snake mouth (after carr).

are present on the maxilla, palatine, pterygoid and dentary bones of skull; in some species the unpaired premaxilla also bears the teeth (Figs. 6 & 7); the bones of the palatal complex of the skull have got most flexible and ligamentous attachment, thus providing a much increased gape to the mouth while swallowing the large prey (Fig. 8); the superior and inferior temporal arcades are not present in a snake skull, thus causing a considerable reduction in the skull bones (Figs. 9–11); the parietal bones are fused intimately in all the snakes; descending process of the frontals articulate with the parietals, thus enclosing the complete brain case; the vertebrae in snakes possess accessory articulating facets, the anterior one called as zygosphene and the posterior one as zygantrum, in addition to the zygapophysus (Fig. 12–14); caudal fracture planes are not available in the vertebrae of the snakes; there is no regeneration in the tail of snakes; the left lung is much reduced or absent; locomotion is by lateral undulations of the dorsal muscles, sidewinding and rectilinear crawling. Most of the snakes are oviparous and lay eggs which are hatched by external heat. But in many species of the snakes development takes place inside the body of the mother and the



**Fig. 6.** Maxilla and teeth in various snakes (poison fangs).

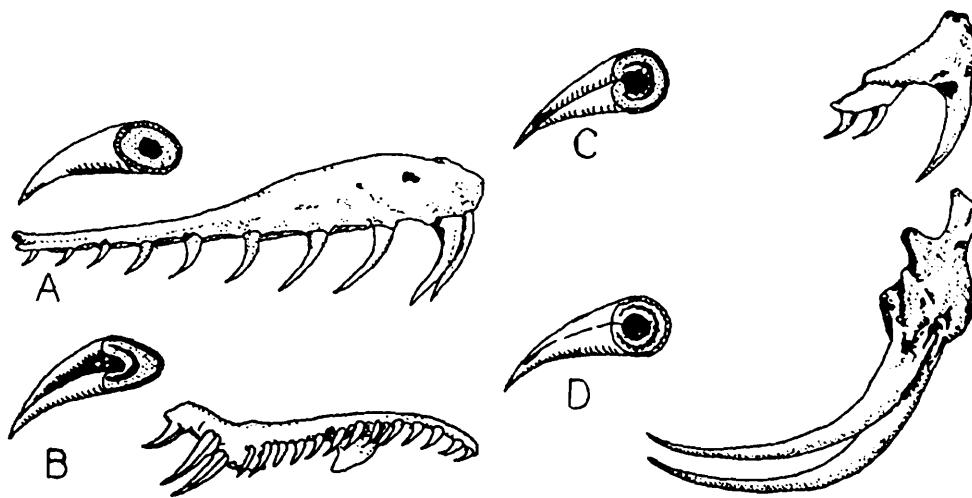


Fig. 7. Maxilla and dentition in various snakes. (A) Aglyphous boid with complete dentition, (B) Ophisthoglyphous colubrid with grooved Venum fang. (C) Proteroglyphous elapid with venom fang, the suture of which is largely fused, (D) Solenoglyphous viper with canalised venon fang.

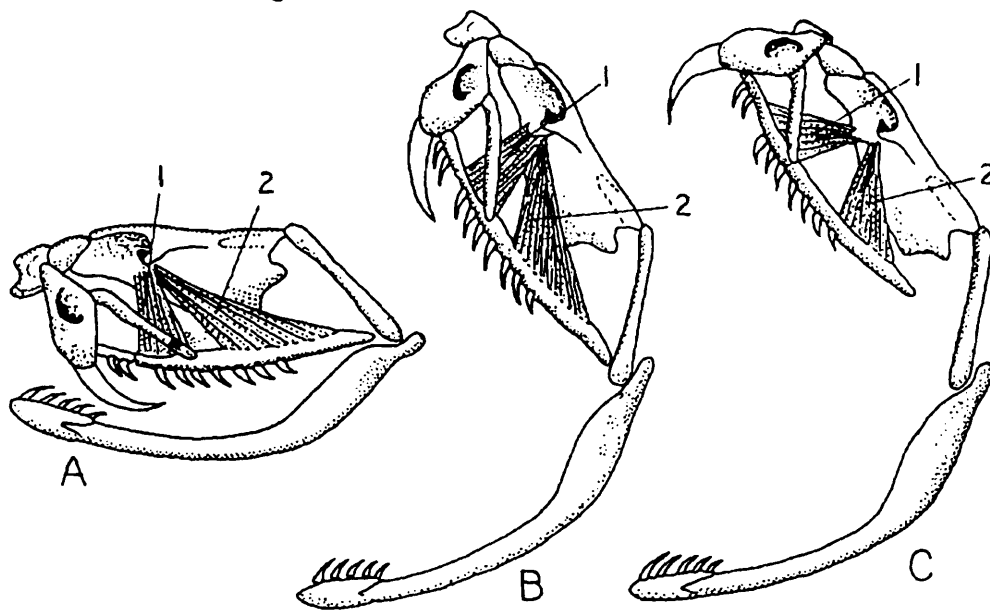


Fig. 8. Mode of fang erection in Solenoglyphous snakes (after Bellairs). (A) Mouth closed and fangs folded against maxilla, (B) Open mouth, fangs remain folded back, (C) Open mouth with erected fangs. (1) Muscular levator (2) Muscular protractor.

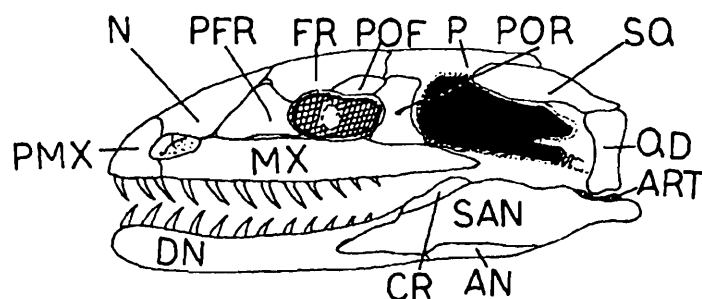
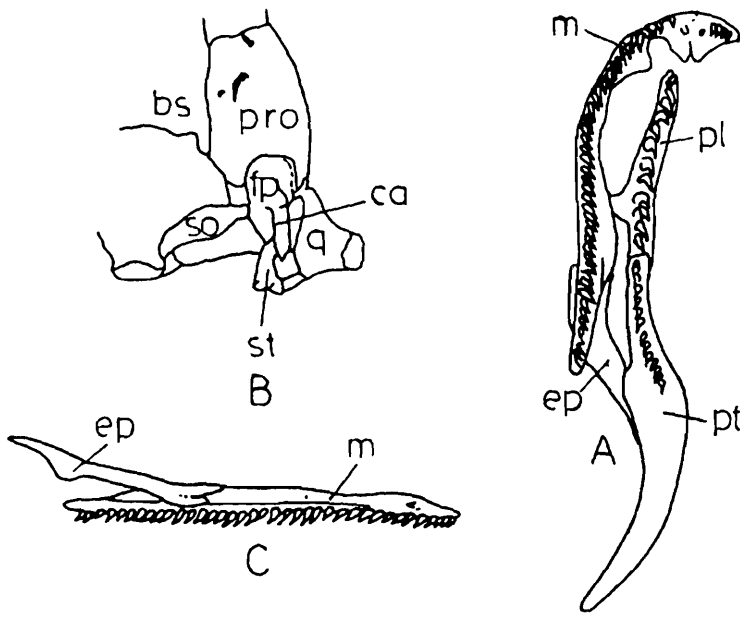
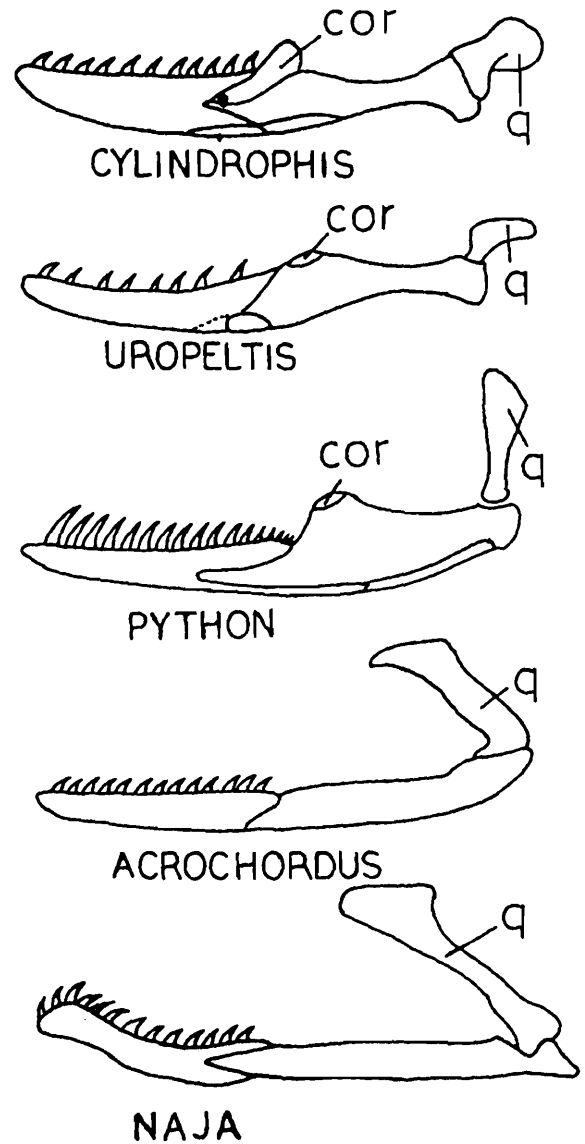


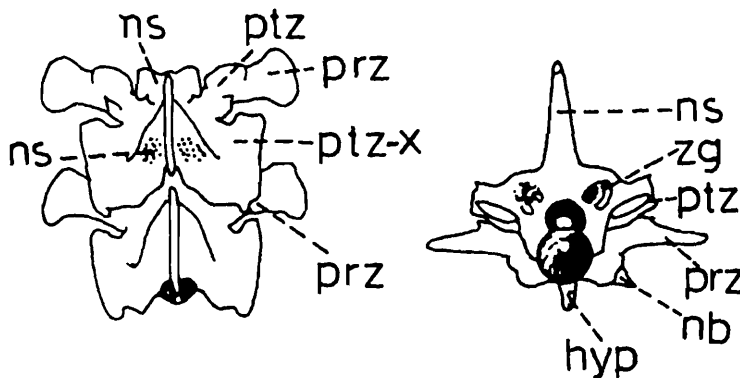
Fig. 9. Bones of skull in a snake.



**Fig. 10.** (A) Maxilla and palatimaxillary arch. (B) Maxillary-ectopyerygoid articulation (C) Ear-bones i., intercalary bone; m., maxilla; n., nasal; p., parietal; pm., premaxilla; prf., prefrontal; pro., prootic; q., quadrate; so., supraoccipital; st., supratemporal; v., vomer.



**Fig. 11.** The lower jaw and quadrate in various snakes indicating the reduction and loss of coronoid and the change in size and position of the quadrate.



**Fig. 12.** Vertebrae in snakes. hyp., hypapophysis; ns., neural spine; prz., prezygapophysis; prz-x., prezygapophysial expansion; ptz., postzygapophysis; ptz-x., postzygapophysial expansion, zg., zygantrum; zs., zygosphene; ib., facets for ribs.

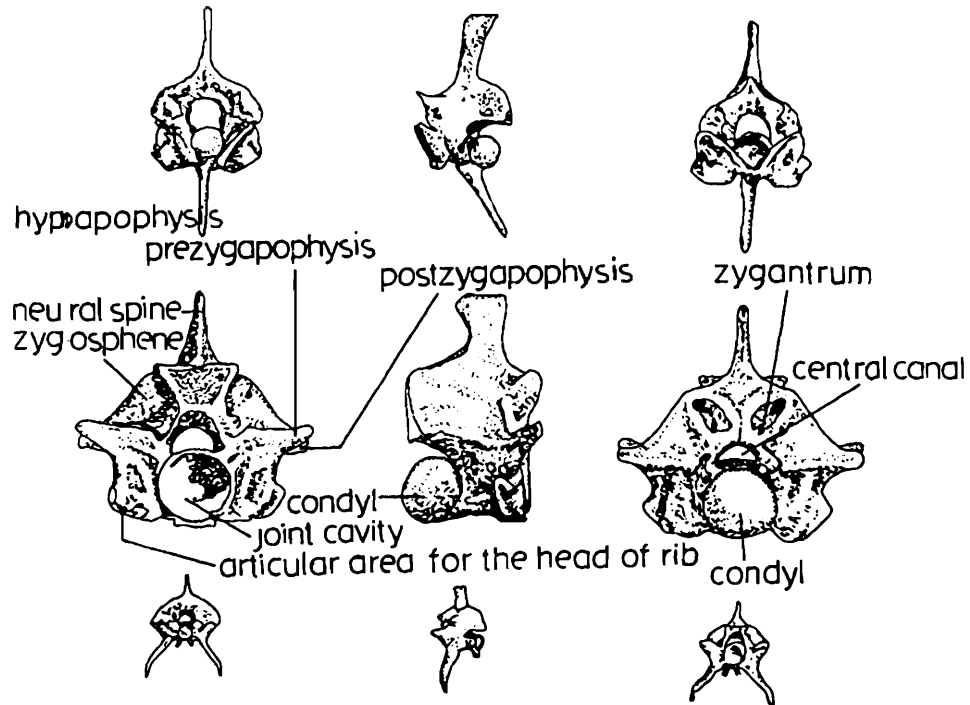


Fig. 13. Nechal, mid-dorsal and caudal vertebrae of a snake, view from in front, from the side and from behind.

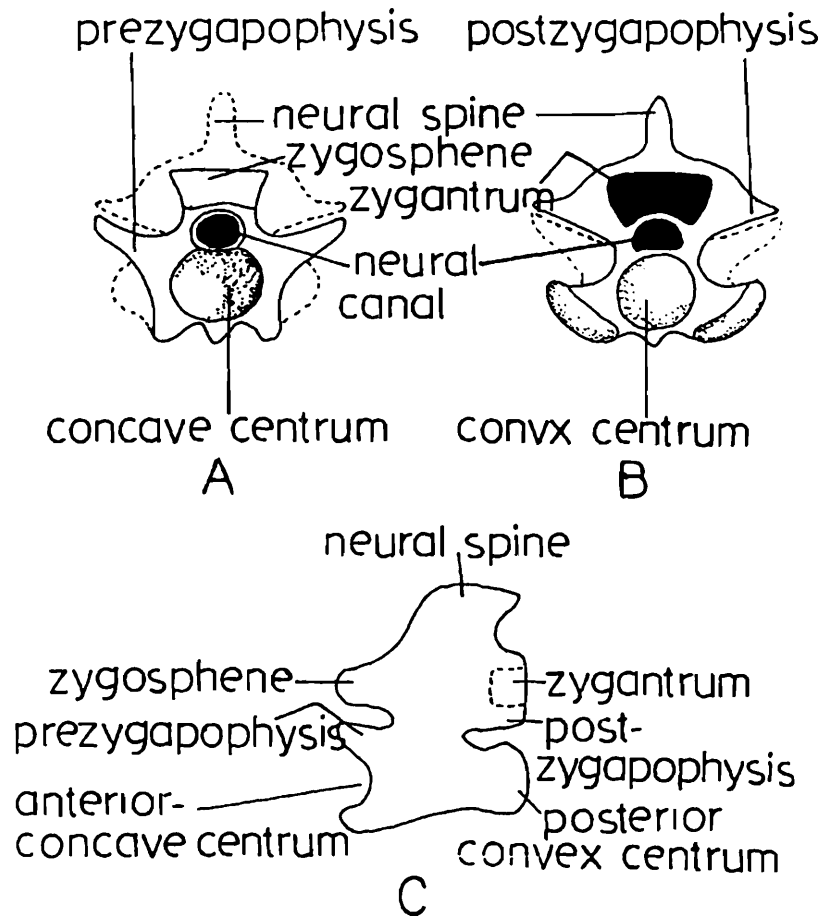


Fig. 14. Snake vertebra : (A) Anterior surface (B) Posterior surface (C) Lateral surface

young are produced alive and this phenomenon is called as vivipary. **Egg-tooth** (Fig. 15) : The embryo of the oviparous snakes possess a sharp calcareous “egg-tooth” on the top of the snout, which they use to break the egg-shell for coming out of it. The egg-tooth is shed after the birth. **Eye** (Figs. 16 & 17) : All the snakes have eyes with eye-lids at one and the other stage of the life cycle. In snakes the eye-lids are missing in the adult animals but these are available in rudimentary condition in their embryos. **Skin** (Figs. 18A, 19) : The entire body is covered by the dry, almost water proof, scaly skin. The scaly layer of the body covering of snakes is formed from the epidermis. The shedding of the skin or ecdysis takes place at regular intervals in snakes and the complete skin is removed at a time. **Vertebral column** (Figs. 18B, C and 20) : Vertebral column in snakes exhibits plenty of variations and is made up of procoelous

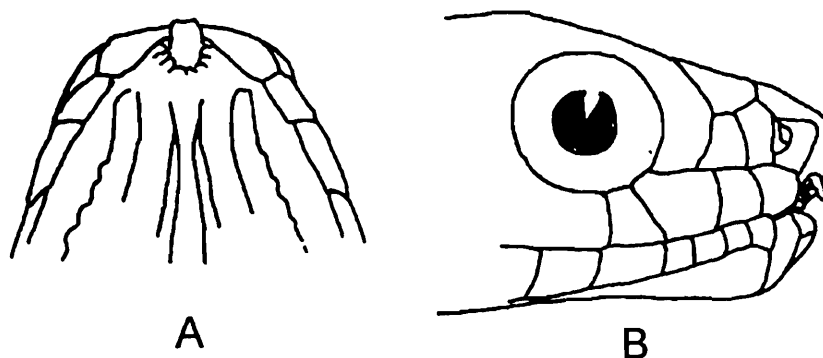


Fig. 15. Egg-tooth of *Elaphe melanura* (A) As seen from below (B) As seen from side.

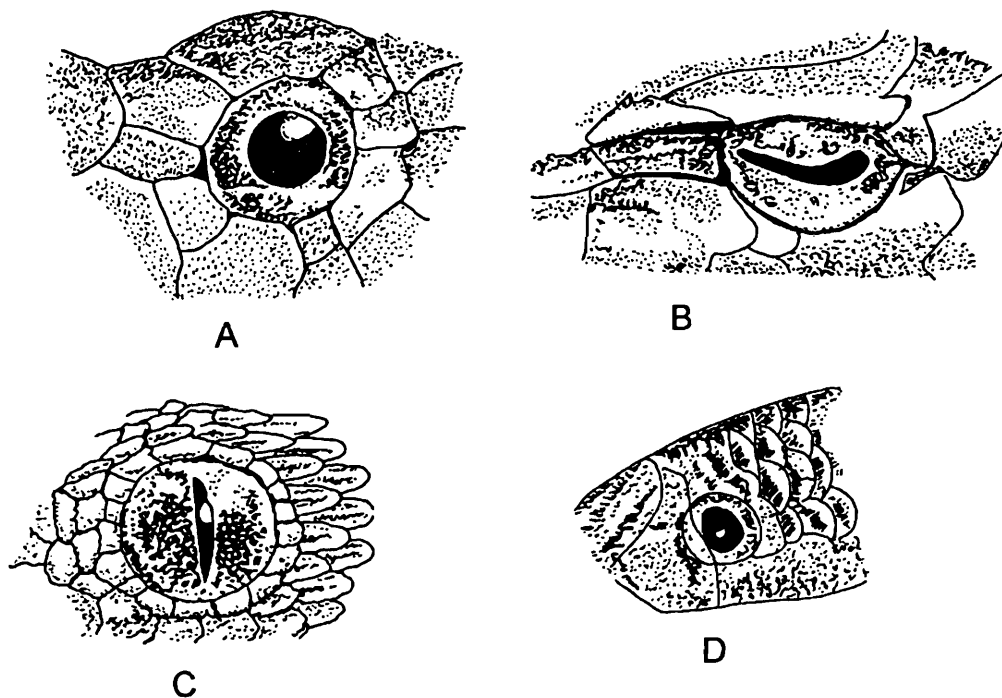


Fig. 16. Snake eyes : (A) With circular pupil in diurnal elapid snake. (*Dendroaspis jamesoni*). (B) With slit pupil in diurnal colubrid snake (*Ahaetulla prasina*). (C) With Vertically slit pupil in crepuscular viper (*Echis carinatus*) (D) With reduced eye covered by a scale in blind snake (*Typhlops lumbricoides*)

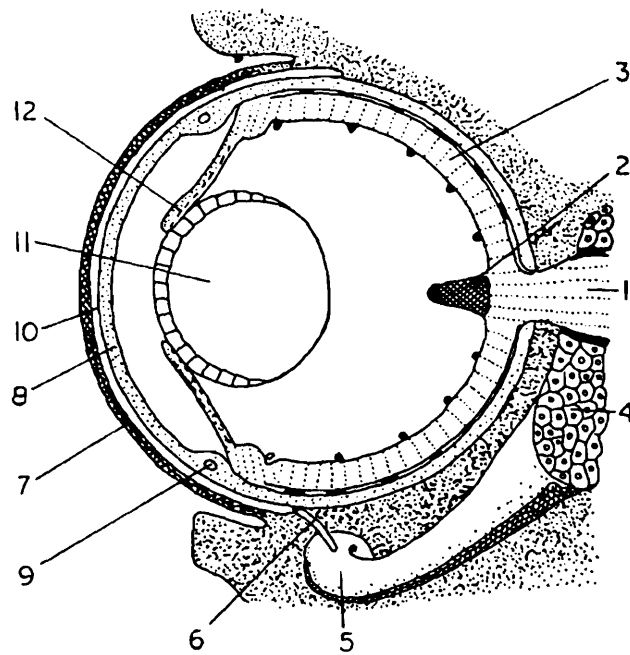


Fig. 17. Structure of the snake eye. 1. Optic nerve, 2. Conus paillarus, 3. Retine, 4. Harderian gland, 5. Lachrymal duct, 6. Lachrymal canaliculus, 7. spectale, 8. Cornea, 9. Canal of Schlemm, 10. Anterior chamber of eye, 11. Lens and 12. Iris muscle.

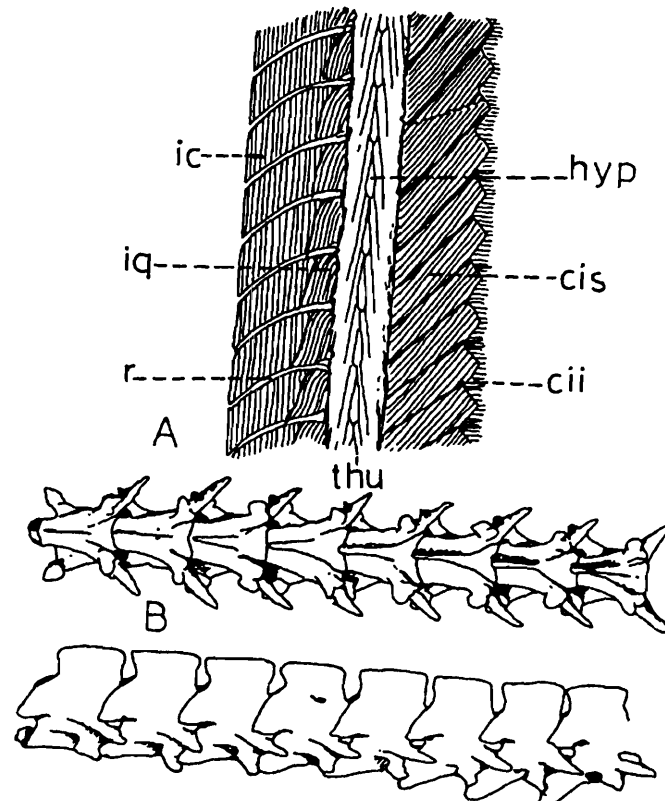
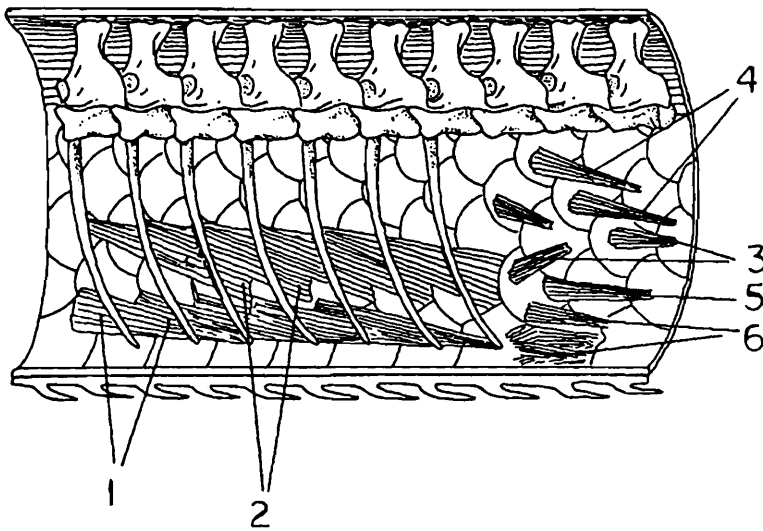
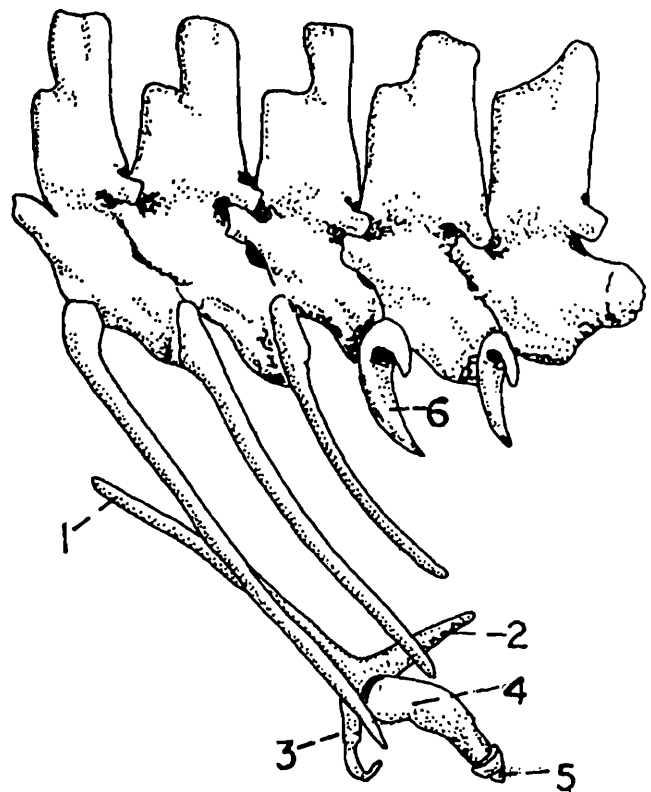


Fig. 18. A. Ventral view of body wall of *Xenochrophis piscator*. The muscle coastalis internus superior has been removed on the left side. B. Ventral and C. Lateral view of anterior dorsal vertebrae of *Ptyas mucosus*, showing the change from the hypophysial to the anhypophysial area. cii., M. costalis internus inferior; cis., M. costalis inturnus superior; hyp., hypapophysis of vertebrae; ic., M. intercostalis proprius; iq., M. intercostalis quadrangularis; r., rib; thy., M. transverso-hypapophyseus.

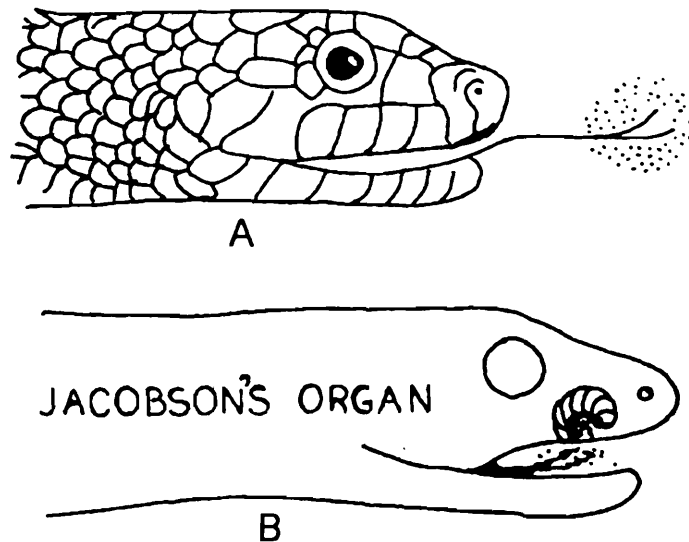
vertebrae, the maximum number in some species reaches up to 400. **Respiration** : All the snakes are with two lungs which expand by the movements of the ribs. Lungs in snakes are asymmetrical, the right one being much larger than the left. **Tongue** (Figs. 21 & 22) : It is long, slender, narrow, forked and is retractile into a basal sheath. It bears numerous sensory corpuscles and is used mainly as an organ of touch or sense. Snakes are devoid of real functional salivary glands and they are modified to form venom glands (Figs. 23–25). Most of the snakes can produce sounds at times and all of them have sense of smell.



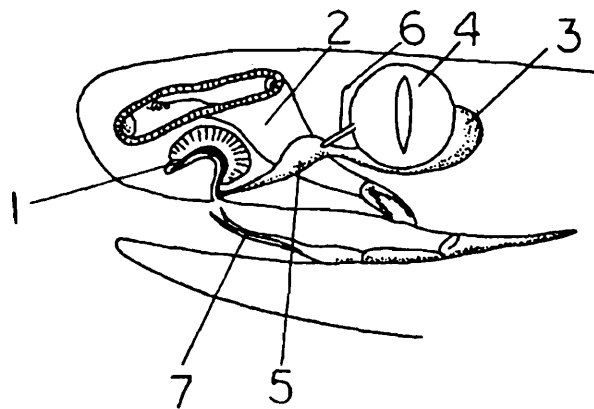
**Fig. 19.** Skin musculature of a snake (after Bellairs and Underwood) 1. Musculi costocutanci inferiores (pulling forward), 2. Musculi costocutanei superiores (pulling backwards), 3. Musculi intersquamales breves, 4. Musculi intersquamales longi, 5. Musculi squamoscutales, 6. Musculi interscutales.



**Fig. 20.** Pelvic region of snake (after Bellairs and Underwood) 1. Pubic bone (pubis), 2. ilium, 3. ischium, 4. femur (thigh bone), 5. claw, 6. lymphaphysis.

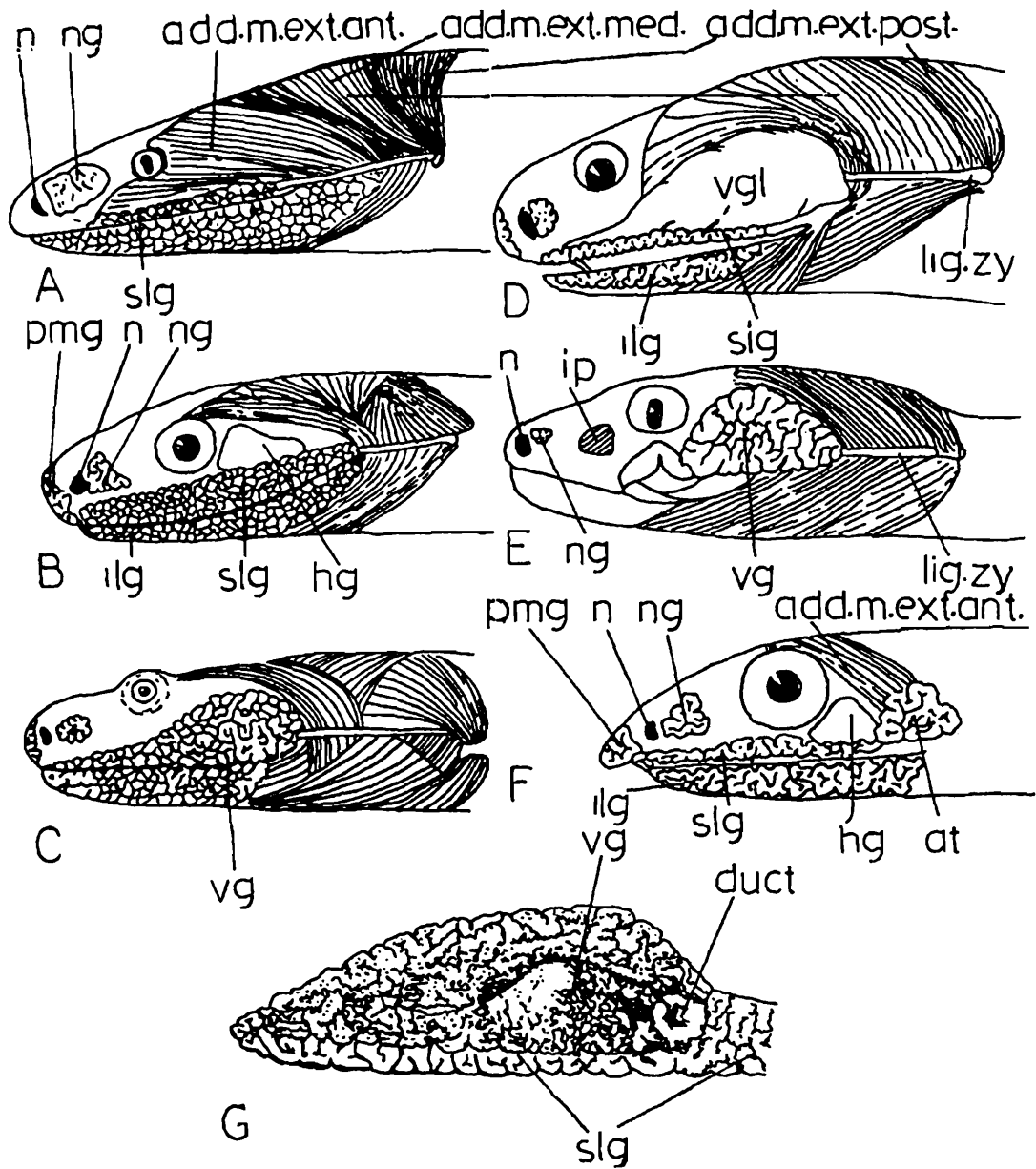


**Fig. 21.** Tongue and Jacobson's organs of a snake. A. Tongue is flicked out to pick up chemical particles from the air. B. Tongue is withdrawn to a point under the Jacobson's organ for Taste-smell analysis.



**Fig. 22.** Diagrammatic transverse section through head region of a snake (after Bellaris and Underwood) 1. Jacobson's organ, 2. nasopharyngeal duct, 3. Harderian gland, 4. eye, 5. lachrymal duct, 6. lachrymal canaliculus, 7. tongue.

The stomach in snakes bears a sufficient storage capacity and allows large volume of the food to be taken. The intestine empties into a terminal chamber of the gut called as cloaca, which also receives the products of kidneys and reproductive organs. The external opening of the cloaca is transverse in the snakes. The cloaca is divided into three compartments viz., proctodaeum, urodeum and coprodaeum. Copulatory organs are contained by the proctodaeum, ureters, vasa deferentia, oviducts and bladder is not available in snakes. The coprodaeum is for the storage of faeces and is available as a separate chamber. Snakes excrete solid crystals of insoluble urates. In snakes like lizards copulatory organ is paired and called as hemipenis (Figs. 26–29). Each hemipenis is a tubular structure of erectile tissue, which protrudes inside out, like the finger of a glove, through the side of cloacal opening. The retraction of the hemipenis is aided by special muscles of the tail musculature. Each hemipenis is grooved on its surface for the conduction of the seminal fluid. Only one organ functions at a time and depends upon the side the male happens to be at the time of copulation.



**Fig. 23** The glands of head : A. *Xenopeltis unicolor*. B. *Ptyas mucosus*. C. *Cerberus rhynchops*. D. *Naja naja*. E. *Trimeresurus erythrurus*. The supralabial gland, much reduced in the vipers, is not shown. F. *Coluber fasciatus*. G. Inner view of parotid and supralabial glands of *Boiga cynodon*, left side. The anterior prolongation of the supralabial gland is not shown. add. m. ext. ant., adductor mandibulal externus anterior; add. m. ext. med., adductor mandibulae externus posterior; a. t., anterior temporal gland; duct, duct of venus gland; h.g. medium; add. m. ext. post., adductor mandibulae externus. Harderian gland; i.l.g , infralabial gland; lig. zy., ligamentum zygomaticum; n., nostril; n.g., nasal gland; pm. g., premaxillary gland; s.l.g., supralabial gland; v.g., venon gland.

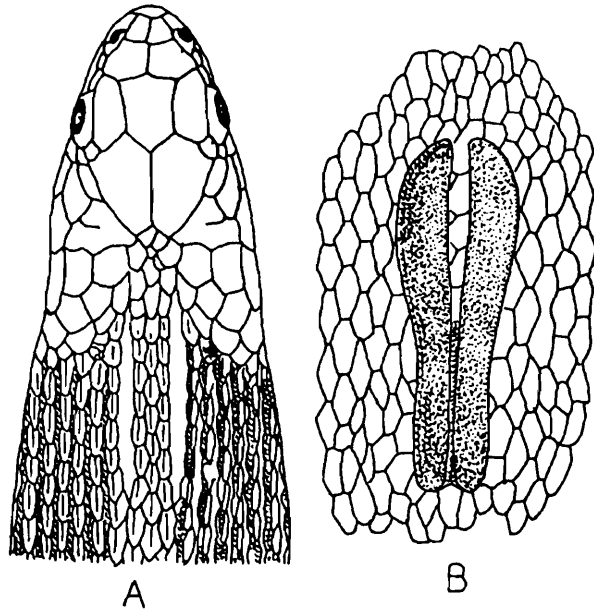


Fig. 24. A. Neck of *Macropisthodon flaviceps*, showing areas of naked skin; B. Nuchal gland of *M. rhodomelas* as seen by reflecting the skin. The dotted lines indicate the scales seen through the skin (after Smith P. Z. S. 1938).

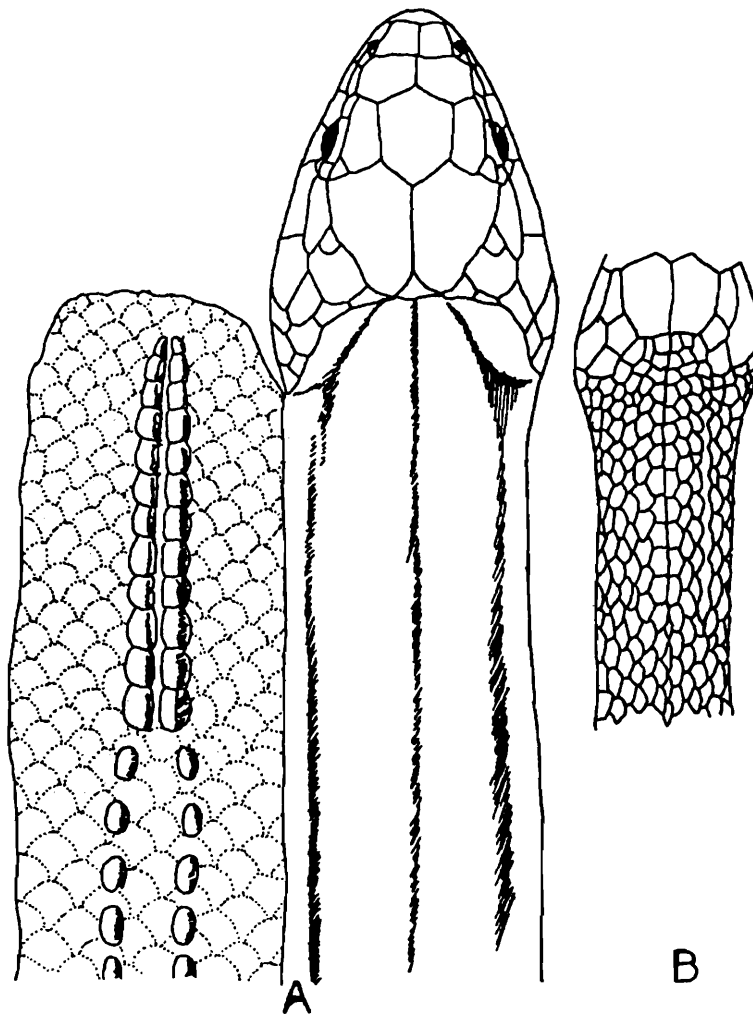


Fig. 25. A. Dissection of neck of *Natrix nuchalis* showing vertebral glands. B. Enlarged nuchal scales of *Natrix nuchalis* (after Smith).

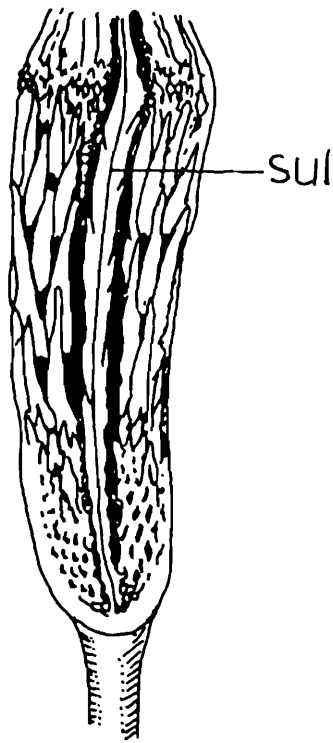


Fig. 26. Hemipenis of *Elaphe oxyccephala*

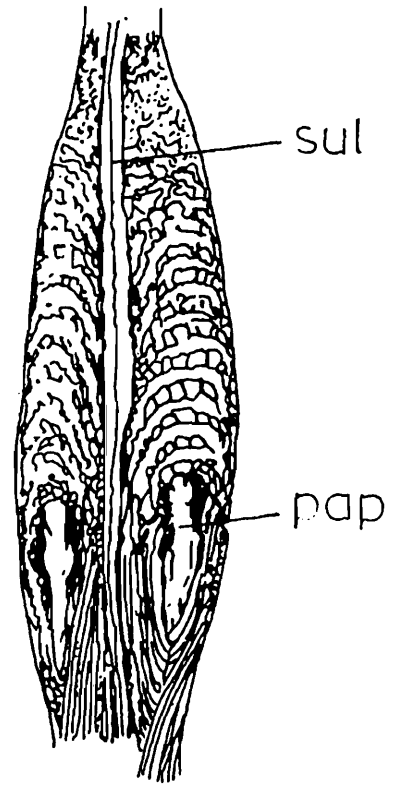


Fig. 27. Hemipenis of *Oligodon albocinctus*. pap., papilla; sul., sulcus permaticus.

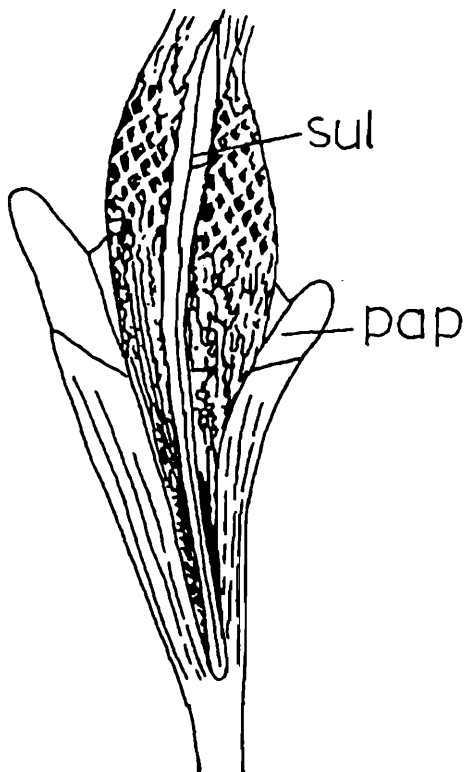


Fig. 28. Hemipenis of *Oligodon cinereus*. The papilla-like processes have been separated from the surrounding tissue.

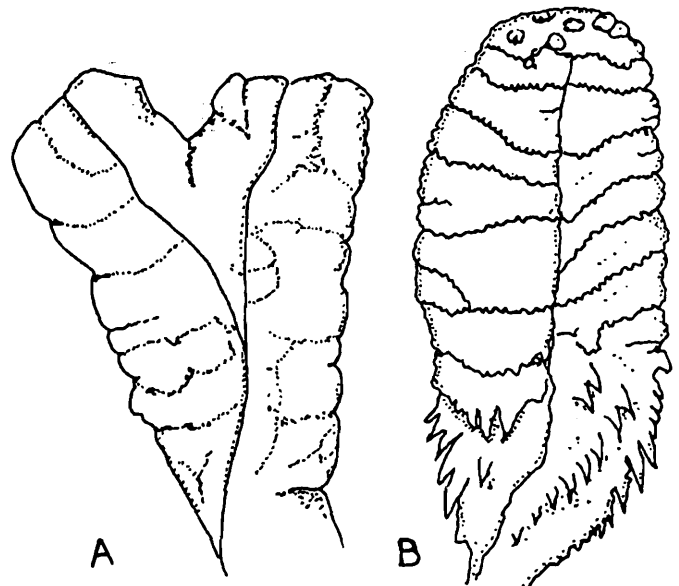
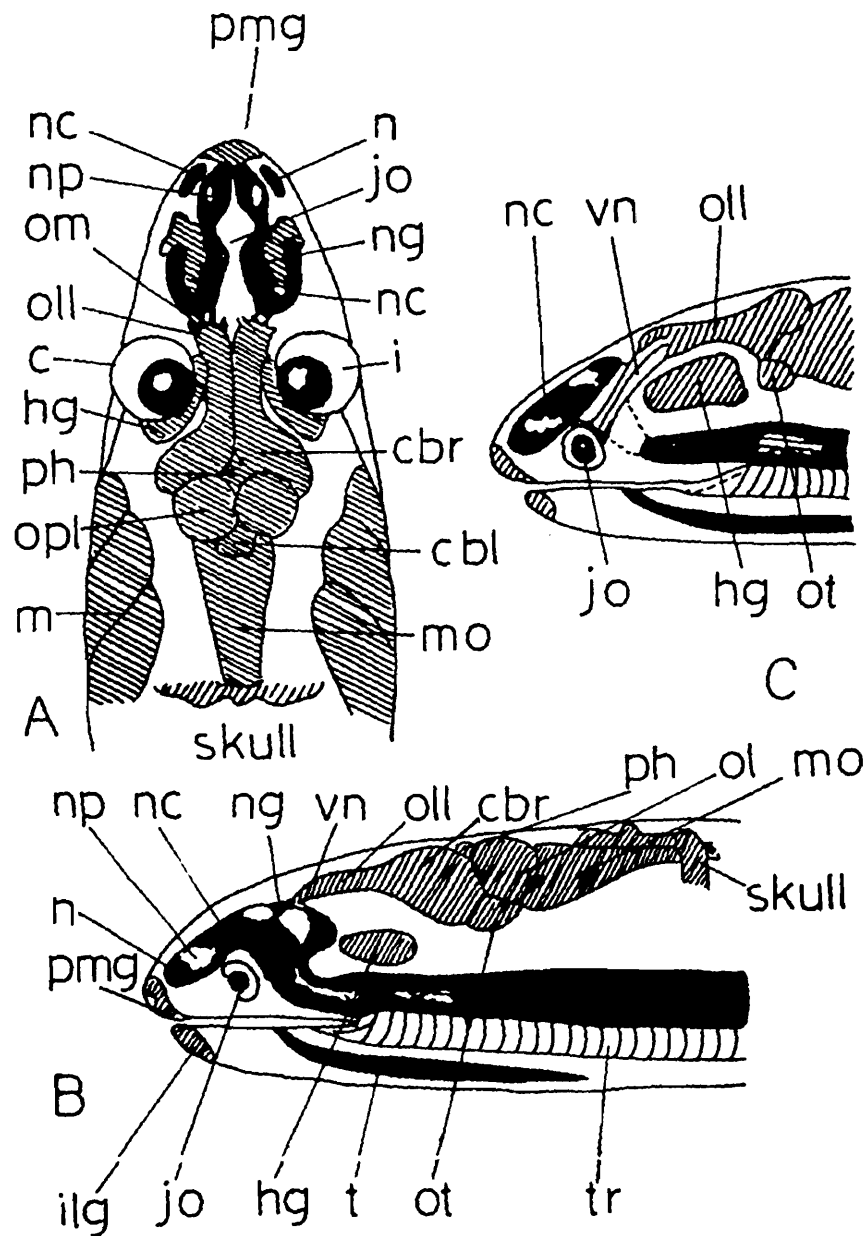
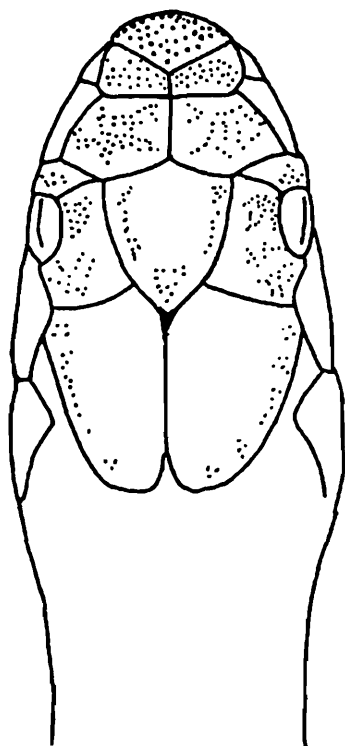


Fig. 29. Hemipenis: A. Boid snake (Cuban boa, *Epicrates angulifer*). B. Colubrid snake (Diadem snake, *Spalerosophis diadema*).

**Nervous system** (Figs. 30 & 31) : The cerebrum is moderately developed in snakes and never covers the mid-brain. Optic lobes are two in number and are situated on the antero-dorsal aspect of the moderately developed cerebellum. Olfactory bulbs are club-shaped and are connected with the cerebral hemispheres through the olfactory tracts. Infundibulum and pituitary are moderately developed.



**Fig. 30.** A. Horizontal and B. & C. Sagittal section through the head of *Ptyas mucosus*. To show the various structures properly, the sections have been made at various levels. cbl., cerebellum; cbr., cerebrum; e., eye; h.g. Harderian gland; il. g., infralabial gland; j.o. (B & C) Jacobson's organ; j.o. (A) position of Jacobson's organ; l., lens; m., muscle; m.o., medulla oblongata; n., nostril; n.c., nasal cavity; n.g., nasal gland; n.p., nasal pad; o. m., cut fibre leading to olfactory membrane; o.t., optic tract; ol. f., olfactory lobe; op. l., optic lobe; p.b., pineal body; pm. g., premaxillary gland; t., tongue; tr., trachea; v.n., vomero-nasal nerve.



**Fig. 31.** Tectile spots (tubercles) on the head of the European smooth snake (*Coronella austriaca*) (after Baumeister).

Indian snakes are broadly placed in following 11 families.

**Family 1 :** *Typhlopidae* includes the oviparous, burrowing, insectivorous and earth-worm eating worm like snakes and are distributed in South West Asia, South Europe, Mexico, Tropical America, Africa, West Indies, Madagascar and numerous Islands of Indian and Pacific Oceans. The family is represented in India by a single genus *Typhlops* including 14 species. In worm snakes both dorsal and ventral surfaces of the cylindrical body are covered with uniform cycloid scales; the eyes are rudimentary and are covered scales; mouth is small, ventrally situated and the lower jaw is devoid of teeth; the pterygoid bone of the skull does not reach the mandible or the quadrate; vestiges of the pelvic girdle is reduced to a single bone; the maxilla is transverse movably but loosely articulated with other skull bones; prefrontal is suturally articulated with the nasal; all the Indian species are devoid of supratemporal; mandible is with coronoid bone; toothless; quadrate elongate and directed horizontally forwards; teeth are directed backwards.

**Family 2 :** *Leptotyphlopidae* includes the thread snakes which are oviparous, feeding mainly on the termites and minute soil arthropods, make galleries by burrowings in the soil and decayed leaf and vegetable litter, distributed in South West Asia including the Rajasthan, Africa; South West U.S.A. and Tropical America. The family is represented in India by a single species *Leptotyphlops blanfordi* from Punjab and Rajasthan. In thread snakes both dorsal and ventral surfaces of the cylindrical body are covered with uniform cycloid scales; the eyes are vestigial and are

under the shields; upper jaw is devoid of teeth; mandible is with coronoid bone; ectopterygoid not present; the pterygoid does reach the quadrate; vestiges of the pelvic girdle is available and consists of a distinct ilium, ischium and pubis; femur is represented by a rudimentary spur; maxilla forms a bony and firm articulation with skull; prefrontal is not in the contact with the nasal; no supratemporal; quadrate elongate and directed horizontally forward.

**Family 3 :** *Uropeltidae* comprises shield tailed or Rough tailed snakes which are restricted to South Indian hilly areas and Sri Lanka. The main food of these viviparous, secretive snakes consists of insects and earthworms. The Uropeltids are distributed in 8 genera and 40 species. In these snakes scales are smooth and slightly larger on the ventral aspect of the body, which is short and cylindrical, head not distinct from the neck, tail is very short and ends in a large, rough, naked file-like shield; the eyes are very small; mouth is small with small uniform teeth on the maxilla and mandible only; the mandible is with a coronoid bone; pterygoid and maxilla bones are connected by an ectopterygoid; the maxilla is fixed and having a sutural articulation with the premaxilla; prefrontal forms sutural articulations with nasal and the maxilla; supratemporal and postorbital bones are not present; quadrate is short and vertically placed.

**Family 4 :** *Anilidae* includes pipe snakes. Two species are available in this region, one in Myanmar (Burma) and another in Sri Lanka.

**Family 5 :** *Boidae* includes Pythons and Boas which are largest of the snakes reaching upto the length of 10 meters or more. Indian record for the Python is about 6 meter. Pythons and Boas are oviparous; their main food comprises small to medium birds, mammals, lizards and amphibians, the prey is killed by constriction. Pythons inhabit marshes, gallery forest and rocky areas near marshes, streams and other water bodies and their main abodes are burrows in moist areas, dense undergrowths and around the stems of small bushes, large rotted logs, caves and abandoned buildings. Boa, *Eryx johni* prefer to live in flat desert with loose clay soil with thin vegetation but *Eryx conicus* prefers to live in comparatively more moist areas like Python. The family is distributed in Africa, South-east Asia, Islands of Indonesia and the Philippines. From world, 22 genera and 90 species are known. From India two species of Pythons (*Python molurus* & *Python reticulatus*) and two species of Boas (*Eryx johni* and *Eryx conicus*) are known. The main characters of the family are as follows : The dorsal body scales are small and smooth; the ventral scales are transversely enlarged, in a single row generally but sometimes two rows are also available in caudal region; the head is quite distinct from the neck, broad and somewhat triangular; tail is short and partly prehensile; eyes are large in Pythons, with a vertical pupil but they are small in Boas, with a vertically elliptic pupil; mouth is large and most flexible, with uniform large, backwardly curved, pointed, sharp teeth or dentary, maxilla, pterygoid, palatine and premaxilla bones in Pythons but Boas are devoid of premaxillary teeth; mandible is having a coronoid bone; maxilla, palatine and pterygoid bones are movable and provide a great flexibility to the skull; prefrontal forms a suture with the nasal;

ectopterygoid is present; pterygoid reaches upto quadrate; the supratemporal is elongated and extends horizontally backward from the brain case, ultimately articulating with vertically situated quadrate; vestiges of the pelvic girdle and hind limb are represented by a distinct ilium, pubis, ischium and femur in all the Indian members of the family; the femur generally terminates in a claw-like spur visible on each side of the vent.

**Family 6 :** *Xenopeltidae* includes the single species Sunbeam snake, which are the nocturnal, burrowing, gentle creatures feeding on small vertebrates like rodents, birds, snakes, frogs and toads. The species is distributed in South India, Burma, Malaysia, Indonesia, Thailand, Southern China and Andamans. In Sunbeam snake head is much depressed, not distinct from the neck, body is cylindrical with small dorsal scales are transversely enlarged ventral scales; tail is very short; eyes are small but distinct; premaxilla, maxilla, palatine and dentary bones of skull are with numerous uniform small teeth; the dentary bone of the lower jaw is flexibly movable on an elongated surangular, this happens on account of the extreme reduction in the size of the coronoid bone in the mandible; pterygoid and the maxilla bones are connected by an ectopterygoid bone; pelvic vestiges are not present; the pterygoid extends to the short, vertical quadrate and the palatine bones; supratemporal present, suspending the quadrate, prefrontals forming a suture with the nasals.

**Family 7 :** *Acrochordidae* is represented by the two species of large fish-eating "Wart Snakes", frequenting the rivers, estuaries and coastal waters from India to New Guinea. In these snakes scales are small, granular and the ventral ones are slightly larger than the dorsals; the body is slightly flattened laterally; head quite distinct from the neck; tail is short and prehensile; eyes are well developed; maxilla and dentary bones are with uniform teeth of moderate size; premaxilla is devoid of teeth; mandible is devoid of coronoid bone; maxilla and pterygoid bones are connected by an ectopterygoid; the pterygoid reaches the quadrate; pelvic vestiges are not present; the anterior skull bones bear a remarkable flexibility and move freely on the cranium; the premaxilla and maxilla are separate; the prefrontal and the nasal are not united but flexibly attached with each other; the supratemporal on one side is intimately united with long quadrate, while freely moves on the cranium.

**Family 8 :** *Colubridae* is very large and widely distributed family comprising the terrestrial, burrowing, arboreal and aquatic snakes. About 2500 species and 250 genera of Colubrine snakes are recognized all over the world. In colubrids dorsal scales are small, more or less rhomboidal in shape and are overlapping; the ventral scales are transversely enlarged to form a single row. The head may or may not be distinct from the neck; the tail is generally long; eyes are large; teeth are numerous, pointed, directed towards the back side, present on maxilla, dentary, palatine and pterygoid bones of skull; the posterior maxillary teeth are grooved in certain species; mandible is devoid of coronoid bone; there is a flexible connection between the maxilla and ectopterygoid; ectopterygoid extends posteriorly above the pterygoid; the pterygoid

generally reaches the quadrate; vestiges of pelvis and hind limbs are not found; all the bones of anterior skull region bear a most flexible and loosely movable condition on the cranium; the premaxilla and maxilla are separate; the prefrontal and nasal are also separate; supratemporal is generally freely movable on the cranium, while the long quadrate slants backward to increase the gape of the jaws.

**Family 9 :** *Elapidae* includes extremely poisonous, terrestrial snakes available throughout the tropical and subtropical regions of the world. The family includes the snakes like Cobras, King Cobra, Kraits, Mambas and Coral Snakes having the grooved fangs in the front part of the mouth which are firmly attached to the anterior end of the maxillary bone and are generally followed by one or more solid teeth. Other characters are same as in family Colubridae. This family includes 41 genera and about 180 species.

**Family 10 :** *Hydrophiidae* includes the deadly poisonous Sea-snakes which are partly or entirely pelagic. They either live on the shore but make excursions out to sea for feeding or remain in the sea for the entire life. Most of the species are viviparous and have no need to come on land. The main food of all the marine snakes comprises different kind of fishes. In sea-snakes the head may or may not be broader than the neck; the tail and body are laterally compressed; eyes are small with round pupil; tongue short, only the cleft portion is protrusible. Other characters are like Colubridae and Elapidae. Sea-snakes are distributed near the coasts of Asia from Persian Gulf to south Japan; eastern African coast upto south of Madagascar; northern coasts of Australia to central America and north south America, through complete mid Pacific Ocean. Sea snakes are represented by 50 species distributed in 10 genera.

**Family 11 :** *Viperidae* includes ordinary Vipers, Pit Vipers, Rattle snakes and Adders. These viviparous, poisonous, terrestrial snakes are available in forest, grassy areas and deserts. Few species are arboreal and saltatorial. Their main food comprises the small vertebrates and arthropods. Vipers are widely distributed in Asia, Europe, Africa, North America and South America. About 150 species and 14 genera are recognised. In Vipers dorsal scales are small, rhomboidal and overlapping; the ventral scales are transversely enlarged, in a single row; in some species tail ventrals are in two rows; the head is quite distinct from the neck; tail is short to moderate; in pit-vipers there is a pit the neck; tail is short to moderate; in pit-vipers there is a pit between the eye and nostril, which is said to be heat sensitive; a horny rattle made up of loosely interlocked bell-like structures is present in American Rattle-snakes; the eyes are of moderate size; maxilla is short and deep bearing a single, large, erectile, tubular fang; palatine, dentary and pterygoid bones are with small, recovered backwardly pointed, sharp teeth; lower jaw is devoid of coronoid; ectopterygoid is long, flexibly articulated with the maxilla and the pterygoid; the pterygoid is movably attached to the long quadrate; no vestiges of pelvis and hind-limbs; the premaxilla and maxilla are separate; prefrontal and nasal are also separate; these anterior skull bones are flexibly movable on the cranium; supratemporal is generally freely movable on the cranium; long quadrate slants backwards to provide a increased gape to the jaws.

## PHYLOGENY

### (Maps 1 and 2)

Now it has been established that the ancestors of the snakes were certain burrowing and aquatic saurian (lizard like) creatures. The fossil records of the snakes are not complete and never go back than lower cretaceous period (130 million years ago). Modern lizards and snakes have evolved from a common ancestral diapsid reptile-stock living on Earth roughly 155 million years back in the middle of the Jurassic period of Mesozoic Era. The Squamatan reptile fossils are not known before the Jurassic period and the lizard remains are not common until the late cretaceous period (110 to 115 million years ago). Triassic Eosuchians are seems to be the real ancestors of modern lizards, snakes and rhynchocephalians.

Eosuchia is the order of fossil reptiles of sub-class Lepidosuria of class Reptilia and includes fossil reptiles like *Youngina* (Upper Permian period of 190 million years back), *Thalattosaurus* (Upper Triassic period or 160 million years back) and *Prolacerta* (Lower Triassic period or 175 to 185 million years back). Almost all the Eosuchians perished by the beginning of the cretaceous period or early Mesozoic Era (roughly 100 million years back) and it was the chance for lizards and snakes, when these creatures flourished vigorously. The true fossils of snakes have so far not recovered beyond the cretaceous period (130 million years back). In one view it is believed that the modern snakes have been evolved from a Varanoid or Platynotan lizard like ancestor. Snakes show many similarities with the fossil *Lanthanotus* (Family Aigialosauridae, Infra order Platynota or Varanoidea, Sub order Sauria, order Squamata). The early snakes were short, medium and large water loving creature with a mixture of lizard and snake characters like their amphibious or aquatic allies of those times namely Aigialosaurs, *Dolichosaurs* and *Mosasaurs*. That was the age when dinosaurs like *Mixosaurus*, *Triceratops*, *Archaeopteryx*, *Tyranosaurus* and *Brontosaurus* were dominant in different biological scenes. Fossil remains of family Boidae go back up to the Eocene epoch (50 million years back). *Gigantophes* which is ancestral to the modern Python was more than 50 feet long. Fossil remains of family Elapidae (Cobras and allies) dates back to Miocene (30 million years) and Pliocene (20 million years) Epochs.

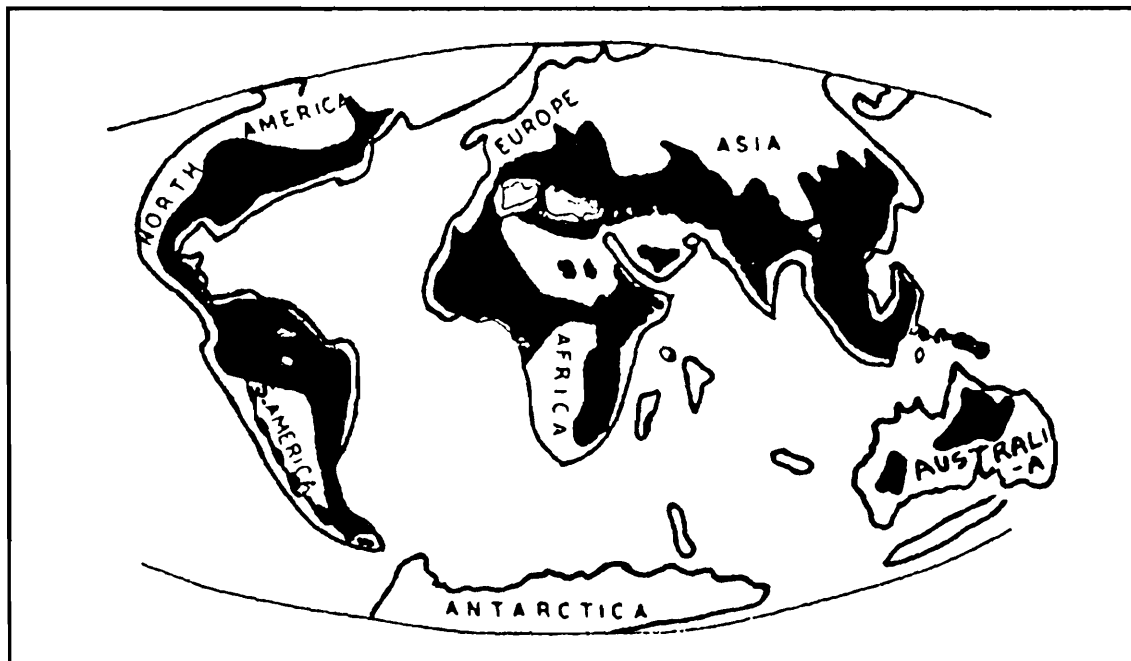
## ZOOGEOGRAPHY

The following distinct Zoogeographical Regions are recognised in Indian sub-continent.

1. **The North-western Arid or Semi-arid Region** : This includes the portion of the Palaearctic region in India including Punjab, Western Rajasthan as far as Aravalli range and Cutch and its adjoining areas in Gujarat. The species of snakes found in this area belong to the genera *Leptotyphlops* and *Eirenix* (Contia).



**Map-1.** Continents started drifting apart before 135 million years in Lower Cretaceous. Distribution of ancestral stock of primitive snakes of family Boidae, Palaeophidae, Pythanomorpha, Aigialosauria and Dolicosauria.



**Map-2.** The shape of earth 67 million years ago in Coenozoic Era when South America and Africa split apart and India joined the South East Asia plate.

**2. Palaearctico-Oriental Sub-Region :** This includes major portion of Kashmir, Himachal Pradesh, Kumaon and Garhwal Himalayas upto Western Tibet, Alpine Punjab and major portion of North-western India excluding the desert portion. The mixing of the Palaeartic and Oriental snake species took place long after the uplift of the Himalayas. The numerous species of snakes belonging to the various genera like *Typhlops*, *Python*, *Eryx*, *Elaphe*, *Ptyas*, *Coluber*, *Sphelerosophis*, *Liopeltis*, *Oligodon*, *Lycondon*, *Xenochrophis*, *Trachischium*, *Boiga*, *Psammophis*, *Bungarus*, *Naja*, *Ophiophagus*, *Vipera*, *Echis* and *Aglistrodon* are available in this region.

**3. Indian Sub-region or Oriental Region :** This includes mainly the Indian Peninsula. The following snake genera which are endemic to the region are the 6 genera of family Uropeltidae namely *Melanophidium*, *Platyplecturus*, *Teretrutus*, *Plecturus*, *Uropeltis*, *Rhinophis* and 3 genera of family Colubridae namely *Coronella*, *Pseudoxenodon* and *Xylophis*.

**4. Assamese and Eastern Himalayan sub-region or Oriental :** This sub-region includes whole of Assam, north Bihar, north Bengal, and the Himalayas to the east of Nepal. The large number of species of snakes belonging to the numerous genera like *Xenopeltis*, *Pareas*, *Stoliczkaia*, *Zaocys*, *Opheodryas*, *C. Jamaria*, *Dinodon*, *Pseudoxenodon*, *Blythia*, *Fordonia*, *Cantoria*, *Achrochordus*, *Ahaetulla*, *Chrysopelea*, *Dryocalamus*, *Sibynophis*, *Xenochrophis*, *Atretium*, *Rhabdops*, *Enhydris*, *Cereberus*, *Gerardia*, *Elachistodon*, *Callophis* and *Trimeresurus*.

Indian snakes are mainly of the Indo-Chinese Origin. Palaeartic and Ethiopian elements could not have much influence.

## PRESENT DISTRIBUTIONAL PATTERN OF SNAKES IN INDIA AND THEIR RELATIONS WITH ADJOINING ZOOGEOGRAPHICAL REGIONS :

**1. Snake species of Palaeartic origin with some admixture of Ethiopian elements :** The following species have their main origin from the Mediterranean, Irano-Turanian, Saharo-Sindian and Palaeotropic subregions.

Family Leptotyphlopidae : *Leptotyphlops macrorhynchus*, *Leptotyphlops blanfordi*,  
Family Colubridae : *Lytorhynchus ridgewayi*, *Lytorhynchus paradoxus*, *Lytorhynchus maynardi*, *Telescopus rhinopoma*; Family Viperidae : *Pseudocerastes persicus*, *Pseudocerastes bicornis* and *Eristocophis mcmahoni*—all above endemic to the Mediterranean subregion. *Eirenis persica* of family Colubridae is common to Mediterranean and Iranoturanian subregions.

**2. Snake species exclusively endemic to the Indian subregion :** The following species are mainly from the climatically diversified geographical zones of Indian subregion namely the desert area of Rajasthan and North-western India; Kashmir and the western Himalayas; the plains of Ganga and Yamuna; Central India; the Indian Peninsula; Western Ghats; Eastern Ghats; The Chota Nagpur area and the North-east India including eastern Himalayas.

Family Uropeltidae : *Melanophidium punctatum*, *Melanophidium bilineatum*, *Melanophidium wynaudentis*, *Platyplectrurus trilineatus*, *Platyplectrurus madurensis*, *Teretrurus sanguineus*, *Teretrurus rhodogaster*, *Plectrurus perroteti*, *Plectrurus guentheri*, *Plectrurus aureus*, *Plectrurus canarius*, *Uropeltis ellioti*, *Uropeltis nitidus*, *Uropeltis ocellatus*, *Uropeltis dindigalensis*, *Uropeltis beddomei*, *Uropeltis macrorhynchus*, *Uropeltis woodmasoni*, *Uropeltis macrolepis*, *Uropeltis ceylanicus*, *Uropeltis arcticeps*, *Uropeltis rubromaculatus*, *Uropeltis rubrolineatus*, *Uropeltis phipsoni*, *Uropeltis myhendrae*, *Uropeltis broughami*, *Uropeltis maculatus*, *Uropeltis petersi*, *Uropeltis liura*, *Uropeltis pulneyensis*, *Uropeltis grandis*, *Uropeltis melangaster*, *Uropeltis phillipsi*, *Rhinophis blythi*, *Rhinophis drummondhayi*, *Rhinophis sanguineus*, *Rhinophis homolepis*, *Rhinophis fergusonianus*, *Rhinophis philippinus*, *Rhinophis travancoricus*, *Rhinophis punctatus*, *Rhinophis oxyrhynchus*, *Pseudotyphlops philippinus*. Family Colubridae : *Coronella brachyura*, *Cercaspis carinatus*, *Balanophis ceylonensis*, *Macropisthodon plumbicolor*, *Aspidura brachyorrhus*, *Aspidura copii*, *Aspidura trachyprocta*, *Aspidura drummondhayi*, *Aspidura guentheri*, *Haplocercus ceylonensis*, *Xylophis perroteti* and *Xylophis stenorhynchus*.

**3. Snake species or Palaearctic origin, intruded in the India subregion :**  
None

**4. Snake species which are common to the Oriental and Palaearctic Regions :** Family Typhlopidae : *Typhlops porrectus*, *Typhlops braminus*. Family Boidae : *Python molurus*, *Eryx conicus*, *Eryx johni*. Family Colubridae : *Elaphe helena*, *Elaphe hodgsoni*, *Ptyas mucosus*, *Argyrogena ventromaculatus*, *Argyrogena rhodorhachis*, *Argyrogena karelini*, *Argyrogena ravergieri*, *Sphalerosophis diadema*, *Sphalerosophis arenarius*, *Sphalerosophis atriceps*, *Oligodon taeniolatus*, *Oligodon arnensis*, *Lycodon striatus*, *Xenochrophis piscator*, *Xenochrophis cerasogaster*, *Amphiesma stolata*, *Boiga trigonata*, *Psammophis schokari*, *Psammophis leithi*, *Psammophis lineolatus* and *Psammophis condanarus*. Family Elapidae : *Bungarus caeruleus* and *Naja naja*. Family Viperidae : *Vipera russelli*, *Vipera lebetina*, *Echis carinatus* and *Agkistrodon himalayanus*.

**5. Snake species of Oriental origin (Indo-Chinese and Indian subregion), intruded into Palaearctic region :** *Elaphe helena*, *Dendrelaphis pictus* and *Macropisthodon plumbicolor*.

**6. Snake species exclusively endemic to the Indo-Chinese and Malayan subregions :** Family Xenopeltidae : *Xenopeltis unicolor*, *Pareas margaritophorus*, *Pareas macularius*, *Pareas monticola*, *Pareas hamptoni*, *Pareas carinatus*, *Haplopeltura boa*, *Xenodermus javanicus*, *Stoliczkaia khasiensis*, *Achalinus rufescens*, *Fimbrios klossi*, *Zaocys carinatus*, *Zaocys nigromarginatus*, *Xenelaphis hexagonotus*, *Opheodrys major*, *Opheodrys multicinctus*, *Opheodrys hamptoni*, *Opheodrys doriae*, *Rhynchophis boulengeri*, *Calamaria pavimentata*, *Calamaria uniformis*, *Calamaria septentrionalis*, *Dinodon septentrionalis*, *Dinodon gammiei*, *Dinodon flavozonatus*, *Pseudoxenodon macrops*, *Pseudoxenodon bambusicola*, *Pseudoxenodon popei*, *Pararhadobphis*

*chapaensis*, *Plagiopholis blakewayi*, *Plagiopholis delacouri*, *Plagiopholis nuchalis*, *Opisthotropis balteatus*, *Opisthotropis premaxillaris*, *Opisthotropis lateralis*, *Opisthotropis andersoni*, *Opisthotropis spenceri*, *Opisthotropis jacobi*, *Opisthotropis annamensis*, *Blythia reticulata*, *Psammodynastes pulverulentus*, *Homalophis buccata*, *Fordonia leucobalia*, *Cantoria violacea*, *Bitia hydroides* and *Herpeton tentaculatum*. Family Viperidae : *Azemiops feae*.

**7 Snake species common to Indian, Indo-Chinese and Malayan subregion : Family Anilidae :** Genus *Cylindrophis* covers the range, *Cylindrophis rufus* is from Indo-Chinese and malayan subregions while *Cylindrophis maculatus* from Sri Lanka represents the Indian subregion of the Oriental region. Family Colubridae : *Acrochordus granulatus*, *Dendrelaphis pictus*, *Dendrelaphis cyanochloris*, *Dendrelaphis gorei*, *Chrysopelea ornata*, *Dryocalamus nymphe* and *Dryocalamus gracilis* are from Indian subregion while *Dryocalamus davisoni* represent the Indo-Chinese and Malayan subregion, *Sibynophis collaris*, *Sibynophis sagittarius*, *Xenochrophis piscator* *Xenochrophis cerasogaster*, *Rhabdops bicolor*, *Ahaetulla fronticinctus*, *Ahaetulla prasinus*, *Ahaetulla nasutus*, *Enhydris enhydris*, *Enhydris sieboldi*, *Cerberus rhynchops* and *Gerardia prevostiana*, *Elachistodon westermanni*. Family Elapidae : *Callophis maclellandi* and *Ophiophagus hannah*. Family Viperidae : *Trimeresurus monticola*, *Trimeresurus stejnegeri*, *Trimeresurus popeorum*, *Trimeresurus erythrurus* and *Trimeresurus albolabris*.

## SYSTEMATIC ACCOUNT

### Order SQUAMATA

#### Suborder SERPENTES

#### 1. Order SERPENTES

1758. Linnaeus, *Syst. Nat.* 10th ed., i : 241.

1937. Pope, *Snakes Alive*

1943. Smith, *Fauna Brit. Ind.*, : 39.

1984. Mahendra, *Annals of Zoology* : 22.

#### 2. Order OPHIDIA Macartney

1802. Macartney, *Ross. Transl. Cuvier's Lect. Comp. Anat.* i, tab. iii.

1890. Boulenger, *Fauna Brit. Ind.* : 232.

1933. Romer, *Vertebrate Paleontology.*, i : 439.

1939. Hoffstetter, *Arch Mus. Hist. Nat. Lyon*, 15 : 3.

The characteristic features of the sub-order are : Limbs and girdles are not present in most of the species but in Boids these are represented by certain rudimentary

structures; body is tubular and much elongated covered with ungranulated overlapping scales, tail scales exhibit great variations in length; snakes are devoid of eyelids and nictitating membrane and a well developed transparent spectacle is developed over the eye; eustachian canal (tympanic cavity) is missing, external ear opening is missing, inter mandibular zone is ligamentous, devoid of symphysis and both the rami in most of species are having elastic or most flexible articulation; the tongue is suitably retractile with in a sheath, is a olfactory organ and conjugates with Jacobson's organ; teeth are pointed, sharp and recurved, replaced after certain interval and in most species are born by the maxilla, palatine, pterygoid and dentary; in certain species teeth are carried out by unpaired premaxilla also; teeth on jaws are pleurodont; most of the bones of skull (including the palatal region) are having most flexible and movable articulations which renders in forming a utmost large gape while swallowing a large prey; there is a considerable reduction in the number of skull bones; parietals and frontals are fused; the descending processes of parietals completely enclose the cranium; supra and infra temporal arcades are missing; in addition to the zygopophyses, snake vertebrae are having accessory articulating facets, the anterior one is known as zygosphenon and posterior as zygantrum; snakes are devoid of regeneration power in tail as caudal fracture planes are not developed; left lung is either rudimentary or altogether missing; locomotion is effected by lateral undulations of dorsal musculature, sidewinding and rectilinear crawling.

### **Key to the Families of Suborder Serpentes**

I. Skull (Fig. 32A & B) is devoid of ectopterygoid and supratemporal; prefrontal and nasal bones are suturally articulated; coronoid bone is present; maxilla bone is transversely located, loosely attached and bears teeth; mandibles are devoid of teeth; vestiges of pelvis are present, may be reduced to a single bone or may be absent; 16-36 uniform scales round the worm like body. Eyes are rudimentary, covered over by scales; tail is very short ..... **TYPHLOPIDAE**

Skull (Fig. 32c) is devoid of ectopterygoid and supratemporal; prefrontal and premaxilla suturally articulated with maxilla bone which is toothless and borders the mouth; prefrontal and nasal bones are suturally articulated; coronoid bone is present in mandibles which are provided with teeth; quadrate bone is elongated anteriorly in a horizontal fashion, pelvis is distinctly differentiated into ilium, ischium, pubis and a vestigial femur; body cylindrical, of equal diameter throughout, covered with 14 uniform cycloid scales. Eyes are rudimentary, covered by shields; tail is very short ..... **LEPTOTYPHLOPIDAE**

II. Coronoid bone is present; prefrontal articulates with nasal.

A.1. Skull is with ectopterygoid, supratemporal and other bones of palate; both jaws are with teeth; supratemporal articulates with the cranium like a scale, completely

- suspending the quadrate, fascial bones are movably articulated. Vestiges of hind-limbs are present. Ventrals are narrow, but quite distinct; more than 40 scales round the body ..... BOIDAE
2. Bones of the skull united to one another; supratemporal intercolated in the cranial wall ..... ANILIDAE
- B. Skull is devoid of supratemporal; tail is very short, blunt and covered with modified scales; Vestiges of limbs are not present, no poison fang in the front of the mouth ..... UROPELTIDAE
- III. Coronoid bone is not present.
- A. Bones of the skull ossified and solidly united; premaxillary teeth are present; prefrontal bone in contact with nasal ..... XENOPELTIDAE
- B. No poison fangs in front of the jaw; premaxillae are devoid of teeth; prefrontal not in contact with nasal; fascial bones movable; a mental groove is present.
1. Ventral shields are distinct ..... COLUBRIDAE
2. No ventral shields; complete body is covered with small granular or tuberculate juxtaposed scales ..... ACROCHORDIDAE
- C. Poison fangs are present in front of the mouth; anterior most maxillary tooth is grooved or tubercular.
1. Maxillary bone is with teeth behind the fangs; tail cylindrical, loreal not present; pupil round; Ventrals almost as broad as the body ..... ELAPIDAE
2. Maxillary bone is with teeth behind the fangs; tail is vertically compressed, paddle shaped; pupil round ..... HYDROPHIIDAE
3. Maxillary bone is quite short, bearing fangs only; pupil vertical, ventrals almost as broad as the body ..... VIPERIDAE

#### Family TYPHLOPIDAE Gray 1845

1845. Typhlopidae Gray, *Cat. Liz. Brit. Mus.*, : 130.

1890. Typhlopidae, Boulenger, *Fauna Brit. Ind.*, : 234.

1943. Typhlopidae, Smith, *Fauna Brit. Ind.*, : 41.

The whole worm like cylindrical body is covered uniformly with cycloid scales; eyes are minute but distinct, covered by enlarged shield like scales; mouth is quite small and ventrally situated; mandibles are devoid of teeth; coronoid bone is present in the lower jaw; ectopterygoid bone is not present. In Indian Typhlopidae; pterygoid bone never reaches mandible or the quadrate; vestiges of the pelvic girdle are available; nasal and prefrontal bones form a contact; maxilla forms a movable articulation with the cranium; supratemporal bone is generally missing, in some species it is present

in a rudimentary form; quadrate bone is quite short and extends forward. The family comprises worm like burrowing snakes. These snakes feed on small insects, arthropods, earthworm and fungi. In whole world about 200 species, distributed in 5 genera are available. Typhlopidae is distributed in Mexico, Central and South America, the West Indies, Africa, Australia, Southern Europe, South Asia, Madagascar, many islands of Indian and Pacific oceans.

Genus 1. *Typhlops* Oppel 1811  
(Text fig. 32)

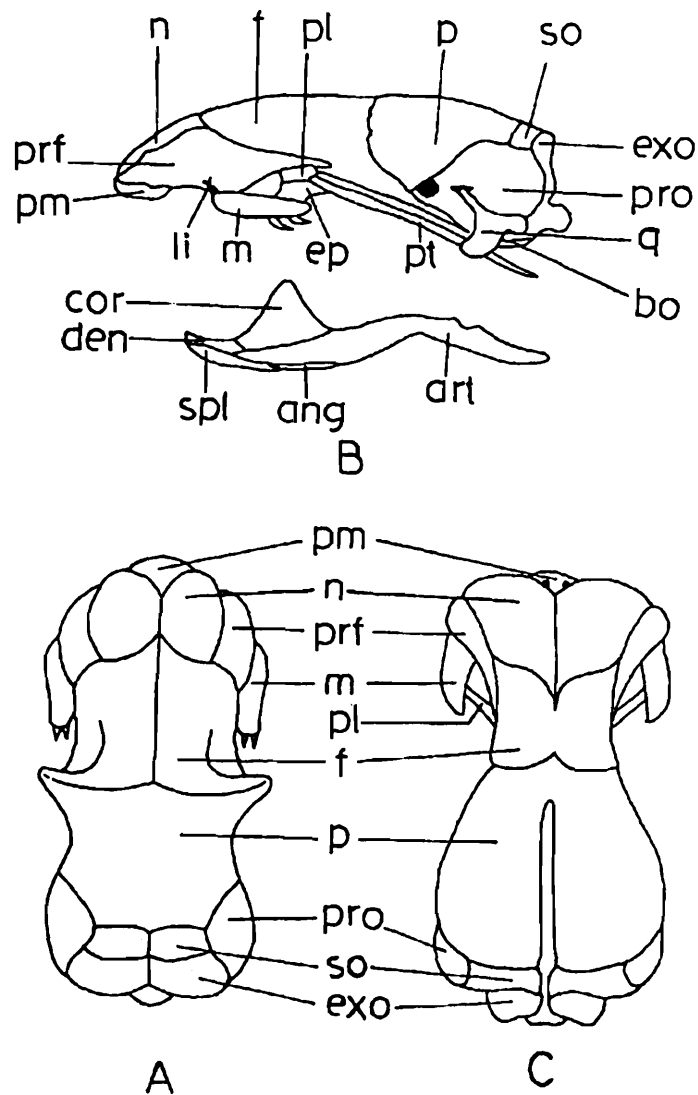
1811. *Typhlops* oppel, *Ordn. Rept.*, 54 (type lumbricalis).

1843. *Typhlops*, Smith, *Fauna Brit. Ind.*, 3 : 43.

Worm like burrowing snakes : head not differentiated from the tubular body; rostral, nasal, ocular and preocular shields are large and conspicuous; nasal is divided into four distinct parts, 2. anterior (upper and lower) and 2 posterior (upper and lower), the cleft passes through the nostril, two clefts are present, upper and lower, in some species upper cleft may be missing; mouth is small and inferior; tail is quite small and bears a terminal spinous hook, which helps the snake in locomotion; supra-labials are 4 in all the species.

**Key to the Species of genus *Typhlops***

- I. Rounded snout with lateral nostrils; subocular shield missing; 3rd and 4th labials form a contact with ocular shield.
  - A. Nasal shields do not form a contact with one another behind the rostral.
    1. 18 scales round the body; breadth of rostral  $\frac{1}{3}$  to  $\frac{1}{2}$  that of head; total length is 50-60 times of the diameter of body ..... *Typhlops porrectus*
    2. 20 scales round the body; breadth or rostral  $\frac{1}{4}$  to  $\frac{1}{3}$  that of head; nasal suture passes to preocular; total length is 30-45 times of the diameter of body; transverse scale rows, 290-320 ..... *Typhlops braminus*
    3. i. Other characters are like *braminus* except that total length is 55-75 times of the diameter of body; transverse scale rows, 370-400 ..... *Typhlops psammeces*
    - ii. Breadth of rostral  $\frac{1}{3}$  to  $\frac{2}{5}$  that of head; nasal suture to 2nd labial; head and neck white ..... *Typhlops albiceps*
    4. 20 scales round the body; rostral is half as broad as the head; eyes are not distinct ..... *Typhlops thurstoni*
    5. i. 22 scales round the body; breadth of rostral  $\frac{1}{4}$  to  $\frac{2}{5}$  that of head; nasal shield is completely divided ..... *Typhlops jerdoni*
    - ii. Rostral is as broad as the head ..... *Typhlops leucomelas*



**Fig. 32.** Skull : A. Dorsal view of the skull of *Typhlops*. B. Lateral view of the skull of *Typhlops*. C. Dorsal view of the skull of *Leptotyphlops*.

6. 22 scales round the body; rostral 1/2 as broad as head; nasal shield is incompletely divided ..... *Typhlops tenuicollis*
  7. 24-26 (rarely 28) scales round the body in Indian specimens; breadth of rostral 1/3 or more that of head; dorsum is black, ventrum is white .. *Typhlops diardi*
  8. 24-26 scales round the body; breadth of rostral 1/4 that of head; dorsum is with longitudinal black lines ..... *Typhlops oatesi*
  9. 24-26 scales round the body; a pair of pits under the snout .....  
..... *Typhlops bothriorhynchus*
- B. Nasal shields form a contact with one another behind the rostral.
1. 18 scales round the body; preocular forms a contact with the anterior nasal shield ..... *Typhlops tindalli*

2. 18 scales round the body; preocular is not in contact with anterior nasal shield  
..... *Typhlops beddomei*
3. 16 scales round the body..... *Typhlops oligolepis*
4. 18 scales round the body; one subocular; nasals separated by rostral .....  
..... *Typhlops mirus*
5. 18 scales round the body; one subocular; nasals not separated .....  
..... *Typhlops ceylonicus*
- II. Rounded snout with lateral nostrils; 1 or 2 subocular shields; 18 scales round the  
body; two shields separate the ocular and preocular from the labials .....  
..... *Typhlops andamanensis*
- III. Pointed snout, with sharp horizontal edge, nostrils are inferior; 26-36 scales  
round the body ..... *Typhlops acutus*

### SLENDER BLIND SNAKE

#### 1. *Typhlops porrectus* Stoliczka 1871

1871. *Typhlops porrectus* Stoliczka, *Jour. Asiat. Soc. Beng.*, **40** : 426, pl. 25, figs. 1-4.

1943. *Typhlops porrectus*, Smith, *Fauna Brit. Ind.*, : 46.

This slender worm snake rarely exceeds 290 mm in length. Snout is rounded, strongly projecting; nostrils lateral. Breadth of rostral 1/3 to 1/2 that of the head, hardly reaching beyond the level of the eyes; nasal shield not divided completely, the suture passes from the second labial to the nostril or slightly beyond; ocular and preocular shields are shorter than the posterior nasal; eyes are distinct, located in the ocular shield or at its junction with the supraocular; lower edge of ocular lies between the third and fourth labials; prefrontal shield always articulates with the rostral; tail is short and ends into a fine spine; scales round the body are 18; total length of the snake is between 50-60 times of the diameter of its body; 400-440 transverse rows of scales on the whole body length. Dorsal colouration is from brown to blackish; ventrum is light brown or still paler; snout, chin, and anal portion is generally whitish.

*Distribution* : India : Whole of India.

*Elsewhere* : Sri Lanka, Burma and Pakistan.

*Habits and habitat* : This nocturnal worm snake leads a subterraanean life, hiding under stones, wooden logs and lives in the association of various small insects like earwigs, silverfish and spiders.

*Status* : Available in abundance throughout its range.

## COMMON BLIND SNAKE, WORM SNAKE

2. *Typhlops braminus* (Daudin, 1803)

(Text figs. 33 &amp; 34)

1803. *Eryx braminus* Daudin, *Hist. Nat. Rept.*, 7 : 279 (based on Russell, 1796, *Ind. Serp.*, 1 : 48, pl. 43, Vizagapatam).

1943. *Typhlops braminus*, Smith, *Fauna Brit. Ind.*, : 46.

This is a small degenerated worm like snake with long tubular body reaching to a maximum length of about 190 mm; head not differentiated from the rest of body; with strongly projecting rounded snout; nostrils are lateral in position; superior portion of the rostral is 1/3 to 1/4 the breadth of the head and never reaches to the level of the eyes; nasal is divided, the lower suture generally crosses the preocular shield which remains in contact with the anterior nasal; posterior nasal shield is slightly larger than the ocular and preocular shields which are almost equal in width; eyes are minute bud distinct, situated in the ocular shield or at its junction with the supraocular; lower edge of ocular shield is wedged in between third and fourth labials; prefrontal shield articulates with the rostral; scales round the body are 20; total

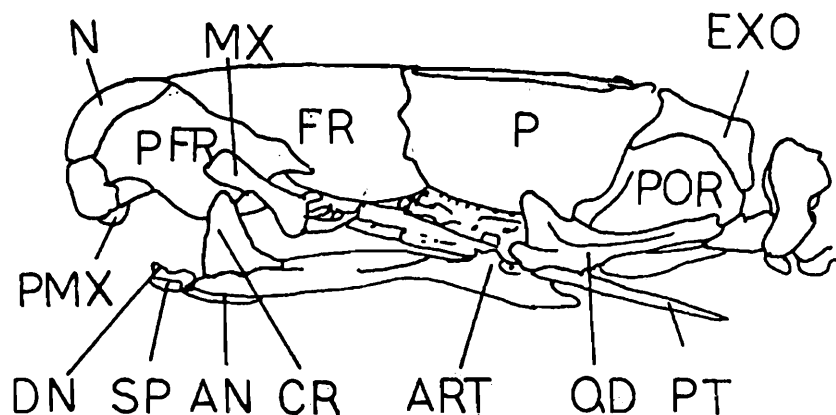


Fig. 33. Skull : *Typhlops braminus* (The blind snake)

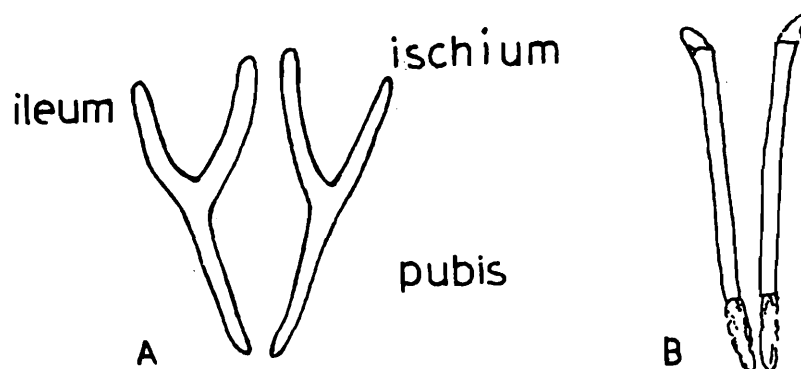


Fig. 34. Pelvic girdle : A. *Typhlops braminus* B. *Typhlops acutus*

length of the snake is between 30-45 times of the diameter of its body; 290-320 transverse rows of scales on the whole body length; tail is short, ending into a fine point like hook. Dorsal colouration is from brownish to black; ventrum is light brown or still paler; snout, anal portion and the end of the tail is somewhat whitish.

*Distribution* : Whole of India.

*Elsewhere* : Burma, Sri Lanka, East Indies, North Vietnam, South Vietnam, Malaysia, Mexico, Pakistan, Bangladesh, Iran, Southern China, Arabia, South Africa, Islands of Indian Ocean, Hawaii and other islands of Pacific ocean.

*Habits and habitat* : Leading a subterranean life burrowing in soft soil, decaying leaf litter and wood. The food comprises worms, ants, termites, soft bodied arthropods and their larvae. The snake is oviparous, 2-8 eggs are laid and breeds from May to June.

*Status* : Available in abundance throughout its range.

### SOUTH INDIAN BLIND SNAKE

#### 3. *Typhlops psammeces* Gunther 1864

1864. *Typhlops psammeces* Gunther, *Rept. Brit. Ind.*, : 444 (Subst. name for *Typhlops tenuis*, preocc. *Rept. Brit. Ind.* : 176, pl. 16, fig. C, Madras, London).

1943. *Typhlops psammeces*, Smith, *Fauna Brit. Ind.*, : 48.

This snake is a comparatively more slender than *braminus* reaching to a maximum length of about 145 mm. Other characters are similar to *braminus*, with which it differs in have more slenderness of body; total length of the snake is between 55-75 times of the diameter of its body; increased number of transverse rows of scales i.e. between 370-400; frontal shield 1/3 the breadth of the head and nasal suture to the preocular. Dorsal colouration is deep brown; ventrum is lighter; tail is whitish-brown.

*Distribution* : South India (Ramnad).

*Status* : It is a rare snake and is known by few examples. Possibly all the examples of *Typhlops psammeces* are the variants of *Typhlops braminus* and the exact status depends on the availability of more material.

#### 4. *Typhlops albiceps* Boulenger 1898

1898. *Typhlops albiceps* Boulenger *Ann. Mag. Nat. Hist.*, (7)i : 124.

1943. *Typhlops albiceps*, Smith, *Fauna Brit. Ind.*, : 48.

This is a small to moderately large worm snake with a tubular body reaching to a maximum length of 255 mm (180-225 mm); head is not distinct from neck, snout rounded and project strongly; rostral 1/3 to 2/5 the width of head and extend up to

eyes; nasal shield is partly divided, not touching the rostral and its lower cleft passes to the first or second labial; preocular and ocular (posterior nasal) are equal in length; eyes are minute; lower edge of ocular shield wedged in between the third and fourth upper labials; head scales are comparatively larger than the body scales; rostral forms a contact with the prefrontal; scales round the body are 20; total length of the snake is about 60 times of the diameter of its body which is between 3-5 mm. Dorsal colouration is light brown to gray; ventrum is paler; head is whitish; neck may be white a light brown; tail and anal region are white.

*Distribution* : Burma (Dawna Hills); Malaysia (Larut Hills, Perak), Thailand (Bangkok, Chantabun, San Kampeng Mountains).

*Status* : A rare snake.

#### MALABAR BLIND SNAKE

##### 5. *Typhlops thurstoni* Boettger 1890

1890. *Typhlops thurstoni* Boettger, *Ber. Senek. Ges. Frankfurt*, : 297 (Nilgiris; Frankfurt).

1943. *Typhlops thurstoni*, Smith, *Fauna Brit. Ind.*, : 49.

This is a moderately large snake reaching to a maximum length of 300 mm; head is not distinct from the neck; body is tubular and slender, with a broadly rounded, strongly projecting snout; rostral broad above,  $1/2$  to  $3/5$  as broad as the head, extend up to the ocular shields, nasal partly divided, larger than ocular and preocular shields, nasal suture passes from the second labial to slightly beyond the nostril, eyes are not distinct; ocular shield touch third and fourth labials but not wedged in between them; prefrontal width is almost half of the head width; prefrontal and rostral shields form a broad contact; supraocular is two times broader than its length; tail tapers to a fine pointed end; scales round the body are 20; total length of the snake is between 50-80 times of the diameter of its body; 550-600 transverse rows of scales on the whole body length. Dorsal colouration is dull brown or yellow; ventrum is pale; snout and anal region is whitish.

*Distribution* : South India (Nilgiris; Trichur).

*Status* : A rare snake (Known from 4 specimens).

#### JERDON'S WORM SNAKE

##### 6. *Typhlops jerdoni* Boulenger 1890

1890. *Typhlops jerdoni* Boulenger, *Fauna Brit. Ind.*, : 238.

1943. *Typhlops jerdoni*, Snuth, *Fauna Brit. Ind.*, : 50.

This worm snake reaches to a maximum length of 280 mm; body is slender, tubular; snout rounded and strongly projecting; nostrils are laterally situated; rostral is narrow, its breadth is  $1/4$  to  $2/5$  that of the head, it extends almost to the level of

the eyes; nasal shield is completely divided and its lower cleft passes to the second labial; posterior nasal is smaller than the ocular and preocular shields; eyes are very distinct and are situated in the ocular shields; lower edge of the ocular shield is wedged in between third and fourth labials; prefrontal shield is distinct which is generally remains in contact with the rostral shield (in certain examples it is just separated), it is smaller than the supraocular; tail is short, ending into a spicule; 22 scales round the body; total length of the snake is between 35-45 times of the diameter of its body; 260-280 transverse rows of scales on the whole body length. Dorsal colouration is from dark-brown to black, ventrum is light brown; snout and anal region whitish.

*Distribution* : India : Eastern Himalayas (Sikkim, Darjeeling and Duars), North-East India (Pashighat, Abor, Khasi Hills).

*Elsewhere* : Burma : Lashio in Upper Burma and Pegu.

*Status* : Available, but not in abundance.

### 7. *Typhlops leucomelas* Boulenger 1890

1890. *Typhlops leucomelas* Boulenger, *Fauna Brit. Ind.*, : 237. (Haycock Mountains near Galle, Ceylon).

1943. *Typhlops leucomelas*, Smith, *Fauna Brit. Ind.*, : 50.

This is a small, slender worm snake reaching to a maximum length of 130 mm; snout is rounded and strongly projecting; nostrils are lateral in position; rostral is a distinct prominent shield, its breadth is almost to that of head and it extends almost to the level of eyes; nasal shield is almost divided and its lower cleft passes to the second labial; posterior nasal is smaller than the ocular and preocular shields; eyes are small, but distinct, placed in ocular shields; lower edge of ocular shield is wedged in between third and fourth labials; prefrontal shield is distinct, smaller than the supraocular, in contact with the rostral shield; tail is short, spiculated; 22 scales round the body; total length of the snake is about 32 times of the diameter of its body. Dorsal colouration is black; ventrum is whitish, a clear line of demarcation separates the dorsal and ventral colouration.

*Distribution* : Sri Lanka : Galle.

*Status* : A rare worm snake and is known by 2 specimen only. This species has a close similarity with *Typhlops jerdoni*.

### PETER'S WORM SNAKE

#### 8. *Typhlops tenuicollis* (Peters 1864)

1864. *Onychocephalus (Ophthalmidion) tenuicollis* Peters, *Mon. Akad. Berlin.*, : 272, pl., fig. 2 (Himalayas, not seen by the author).

1943. *Typhlops tenuicollis*, Smith, *Fauna Brit. Ind.*, : 50-51.

The description of this worm snake is based upon a much broken up, discoloured type specimen of *T. theobaldianus* as such the length of snake can not be ascertained. Other characters indicate that the snout is strongly projecting and rounded; nostrils are laterally placed, breadth of the rostral is almost half that of head, it extends up to the level of the ocular shields, in contact with the prefrontal shield, nasal shield is partly divided, upper suture is not present and the lower suture passes to the first labial; preocular shield is larger than the ocular shield; ocular and preocular are shorter than the posterior nasal; lower edge of the ocular shield wedged in between third and fourth labials; supraocular shield is two times broader than long; eyes are not prominent; tail is short, ending in a fine point; 22 scales round the body. As per Smith, *Fauna Brit. Ind.* total length of snake is between 65-70 times of the diameter of its body; 480-520 transverse rows of scales on the whole body length. Colouration can not be ascertained.

*Distribution* : Eastern Himalayas, Naga Hills (Samagutin), Assam.

*Status* : A rare worm snake, known by 3 examples only.

DIARD'S BLIND SNAKE  
9. *Typhlops diardi* Schlegel 1839  
(Text figs. 35 & 36)

1839. *Typhlops diardi* Schlegel, *Abbild. Amphib.*, : 39.

1943. *Typhlops diardi*; Smith, *Fauna Brit. Ind.*, : 51-52.

This is comparatively a large worm snake reaching to a maximum length of 430 mm.; snout is strongly projecting and rounded; nostrils are lateral in position; upper portion of the rostral 1/3 to 3/5 the breadth of head, may or may not extend to the level of eyes, remains in contact with the prefrontal; nasal shield partly divided, its lower cleft passes to the second supralabial; posterior portion of nasal is larger than the ocular and preocular; lower edge of the ocular shield is wedged in between third and fourth labials; eyes are distinct and are situated in the ocular shields; tail is short and ends into a small spine; scales round the body are 22-28; total length of the snake is between 26-32 times of the diameter of its body; 260-300 transverse rows of scales on the whole body length. On the basis of colouration and scales round the body two distinct geographical forms are defined.

I. *Typhlops diardi diardi* Smith.

24-28 (generally 24-26, rarely 28) scales round the body. Dorsum is brown to blackish; ventrum is paler, the two colours are not strongly contrasted.

*Distribution* : India : Bengal, Assam, Burma, North Vietnam (above lat. 16°).

II. *Typhlops diardi muelleri* Brongersma.

22-26 (generally 24-26, rarely 22) scales round the body. Dorsum is blackish olive to brown; ventrum is yellowish white, two colours bear a clear line of demarcation.

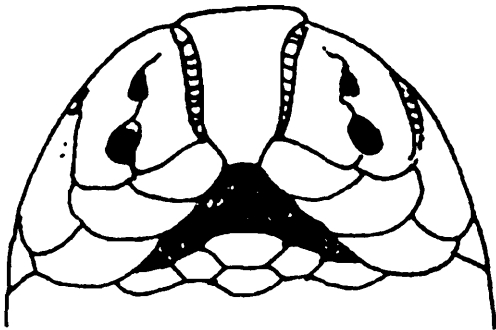


Fig. 35. *Typhlops diardi* Schlegel, as seen from below.

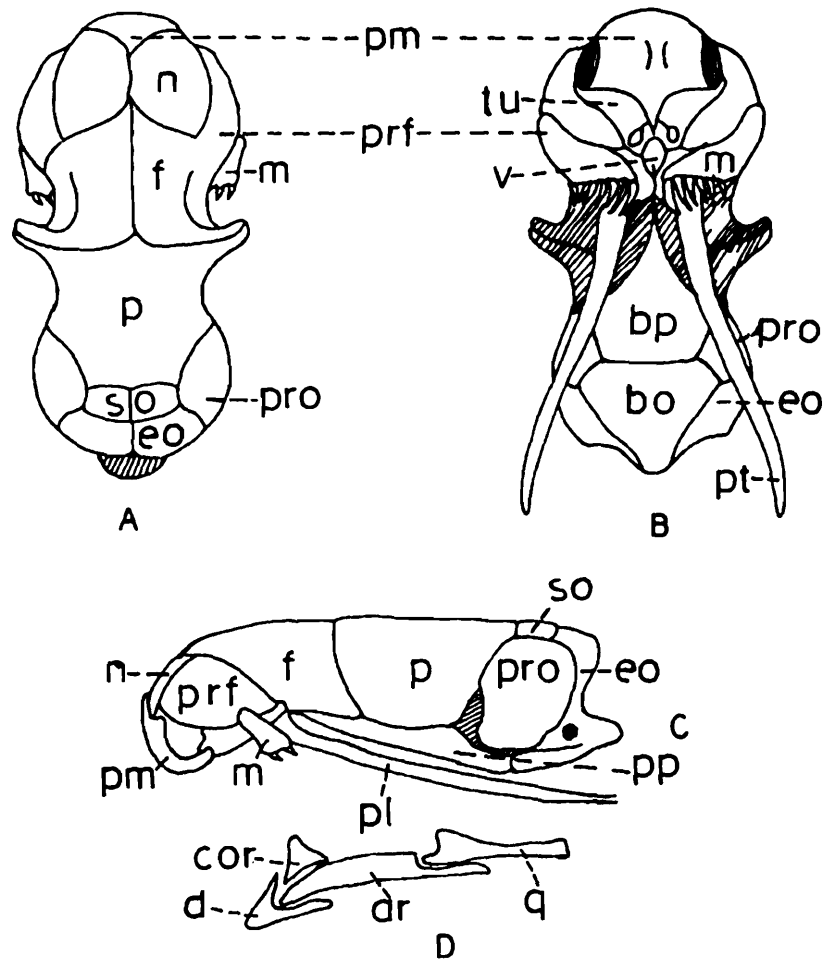


Fig. 36. Skull : *Typhlops diardi*. A. Dorsal view, B. Ventral view, C. Lateral view., D. Side view of left mandible. ar., articular; bo., basioccipital; bp. basisphenoid; cor., coronoid; d., dentary; co., exoccipital; f., frontal; m., maxilla; n., nasal; p., parietal; pl., palatine and pterygoid, no suture visible; pm., premaxilla; prf. prefrontal; pro., prootic; pt., pterygoid; q. quadrate; so., supraoccipital; tu., turbinar or septomaxilla); v., vomer.

*Distribution* : Burma; Thailand; Combodia; North and South Vietnam below lat. 16°; Malaysia and Archipelago.

*Habits and habitat* : Lead a secretive subterranean life, burrowing in mud, decaying wood, soft earth, vegetation. This worm snake is a strong burrower and the process of burrowing is effected with the help of the terminal spine of the tail, which is used as a lever or anchor on the ground or other substrata while moving the body in different directions. Food comprises small worms; soft arthropods, crustaceans and their larvae. Breeding takes place between May-August; usually 3-14 eggs are laid at a time. Smith in his FBI states that a specimen obtained by him near Saigon contained 14 fully developed embryos.

*Status* : Available in sufficient numbers in throughout its range.

## CACOS BLIND SNAKE

10. *Typhlops oatesi* Boulenger 1890

1890. *Typhlops oatesi* Boulenger, *F.B.I.* : 238.

1943. *Typhlops oatesi*, Smith, *Fauna Brit. Ind.* : 53.

This is a small worm snake reaching to a maximum length of about 200 mm. Its snout is rounded and strongly projecting; nostrils are lateral in position, rostral shield is narrow, whose breadth is 1/4 that of head and extends anteriorly forming a wedge between the two eyes; nasal shield is distinctly divided and its lower cleft reaches to the second labial; ocular and preocular shields are longer than the posterior nasal part; lower end of the ocular shield is wedged between the third and fourth labials; eyes are distinctly placed in the ocular shields; rostral is in contact with the prefrontal; tail is short, spinose at the end; 24 scales round the body; total length of the snake is between 30-32 times of the diameter of its body. Dorsal colouration is brownish or yellow, dark brown spots in the centres of scales form longitudinal lines down the body; on the middle of belly these spots are missing and form a homogenous yellowish-brown colouration.

*Distribution* : India : Andaman Islands (Cocos Group).

*Status* : A rare snake, known only from the three type-specimens.

## GUNTHER'S BLIND SNAKE

11. *Typhlops bothriorhynchus* Gunther 1864

1864. *Typhlops bothriorhynchus* Gunther, *Rept. Brit. Ind.*, : 174, pl. 16, fig. G ("Penang"; London).

1943. *Typhlops bothriorhynchus*, Smith, *Fauna Brit. Ind.*, : 53.

This small worm snake reaches to a maximum length of 180 mm; strongly projecting rounded snout; lateral nostrils; narrow rostral, whose upper part is almost 1/3 the width of head, this shield extends upto the level of eyes; nasal shield is distinctly divided, the lower cleft of nasal passes to the second labial; ocular, preocular and posterior part of nasal are almost equal in length; eyes are distinctly placed in the ocular shields; lower edge of ocular shield is wedged in between the third and fourth labials; rostral forms a contact with prefrontal; a shallow but distinctly visible depression on each side of the snout, just below the nostril, the nasal cleft passes through this depression; tail is small, ends in to a fine spine; scales round the body are 24; total length of the snake is almost 30 times of the diameter of its body; 300-330 transverse rows of scales on the whole body length—Dorsal colouration is Brown, belly is light-brown.

*Distribution* : India : Assam; Hardwar in Uttar Pradesh (recorded by Stoliczka, specimen is not traceable now).

*Status* : A rare snake.

TINDALL'S BLIND SNAKE  
12. *Typhlops tindalli* Smith 1943

1893. *Typhlops thurstoni* (not of Boettger) Boulenger, *Cat. Sn. Brit. Mus.*, 1 : 26.

1943. *Typhlops tindalli* Smith, *Fauna Brit. Ind.*, : 53.

This slender worm snake reaches to a maximum length of 175 mm. Its snout is strongly projecting, rounded; lateral nostrils; broad rostrals,  $\frac{3}{5}$  of the width of head, do not reach to the ocular shields; nasal shield is not divided completely, its lower suture passes to the preocular which forms an intimate contact with the small anterior nasal; posterior nasal is quite large, much larger than the anterior nasal, both form an intimate contact behind the rostral; eyes are not distinctly visible; ocular shield is not wedged between the third and fourth labials (simply touches them) it is much smaller than the preocular shield; supraocular is two times broader than long; prefrontal and frontal shields are distinctly larger than the adjoining body scales, tail is small, rounded and is devoid of spine; scales round the body are 18; total length of the snake is about 50 times of the scales on the whole body length. Snake is deep yellow in colour.

*Distribution* : India : Kerala (Nilambur).

*Status* : A rare snake, known from 3 type specimens only.

BEDDOM'S BLIND SNAKE  
13. *Typhlops beddomei* Boulenger 1890

1890. *Typhlops beddomei* Boulenger, *F.B.I.*, : 237.

1943. *Typhlops beddomei*, Smith *Fauna Brit. Ind.*, : 54.

This is the smallest worm snake whose length generally reaches upto 110 mm, whole of head in front of the eyes is studded with glandular structures; snout is strongly projecting and rounded; nostrils are lateral in position; rostral shield  $\frac{1}{3}$  of the head in breadth, not reaching to the level of eyes; nasal shield is distinctly divided, the lower cleft passes to the second labial; posterior portion of nasal shield is very large and is in contact with the anterior nasal just behind the rostral; posterior nasal is larger than the preocular or ocular shields; eyes are quite distinct; lower edge of ocular shield is not wedged in between the third and fourth labials; supraocular shield two times broader than its length, tail is short ending into a point; scales round the body are 18; total length of the snake is between 20 to 30 times of the diameter of its body; 190-200 transverse rows of scales on the whole body length. Dorsum is brown; ventrum is comparatively paler; snout and anal region are whitish; most of the individuals are with a distinct dark-brown vertebral line.

*Distribution* : India : Hilly areas of Kerala; Anaimalai Hills; Tinnevely; Vizagapatam (Kimedda Hills). Available between 2000-5000 feet.

*Status* : Available in sufficient number.

## WALL'S WORM SNAKE

14. *Typhlops oligolepis* Wall 1909

1909. *Typhlops oligolepis* Wall, *J. Bombay nat. Hist. Soc.*, **19** : 339, fig. (Nagri Valley, Darjeeling dist., 5000 feet; London), and **29** : 347 (1923).

1943. *Typhlops oligolepis*, Smith, *Fauna Brit. Ind.*, : 55.

It is quite a small worm snake, its body length hardly reaches upto 145 mm. This species is quite similar to *beddomei* in taxonomic characters but differs in having a smaller rostral shield; less distinct eyes; tail without a spine; scales round the body are 16; total length of snake is between 50-60 times of the diameter of its body. Dorsum is brown; lower parts some what yellowish.

*Distribution* : India : The Eastern Himalayas upto 5000 feet (Sikkim, Nagri Valley; Darjeeling district).

*Status* : It is a rare snake, known by three type specimens only.

15. *Typhlops mirus* Jan 1860

1860. *Typhlops mirus* Jan. *Icon. Gen. Liv. I*, pls. iv-v. fig. 7 (Ceylon : Leyden).

1984. *Typhlops mirus*, Mahendra, *Ann. Zool.*, **22** : 35.

The maximum length of this typhlopid snake reaches upto 140 mm. Dorsal colouration is brown, ventrum is comparatively paler; snout and anal region whitish. Snout is rounded and strongly projecting; nostrils are lateral in position; rostral is almost as broad as the head, reaches almost up to the level of eyes; nasal shield is completely divided, the lower suture passes to the second labial; ocular and preocular shields are small, much shorter than the posterior nasal, which is separated from the labials by a subocular—which is wedged in between them above and is in contact with the second, third and fourth labials below; eyes are quite small but distinct, the ocular shield is in contact with the fourth labial only; prefrontal is in contact with the rostral; tail is bluntly pointed, devoid of spines; 18 scales rows round the body, the total length is about 40-50 times of its body diameter; transverse rows of scales are 330-360.

*Distribution* : Sri Lanka (hilly area near Peradeniya).

*Status* : A rare snake.

16. *Typhlops ceylonicus* Smith 1943

1943. *Typhlops ceylonicus* Smith, *Fauna Brit. Ind. Rept.*, **3** : 55.

1984. *Typhlops ceylonicus*, Mahendra, *Ann. Zool.*, **22** : 36.

The maximum length of this typhlops is 140 mm. It is closely related to *Typhlops mirus* from which it differs in having the nasals in contact with one another behind

the rostral, and its body is comparatively stouter. Dorsum is brown and ventrum is yellowish-white. Its snout is rounded and projects strongly; nostrils are lateral in position; head is two times broader than the rostral; nasal is completely divided, the lower suture passes to the second labial, the posterior nasal shield is quite large, in a intimate contact with its fellow shield are small and preocular is separated from the labials by a subocular, which is wedged in between them above, and forms a contact with the second, third and fourth labial below; eyes are not visible, the ocular shield is in contact with the fourth labial only; tail is blunt and is devoid of the terminal spine; scales round the body are 18, the total length is about 35 times of its body diameter; transverse rows of scales are 330.

*Distribution* : Sri Lanka (Peradeniya).

*Status* : A rare snake, known from a single specimen.

#### STOLICZKA'S BLIND SNAKE

##### 17. *Typhlops andamanensis* Stoliczka 1871

1871. *Typhlops andamanensis* Stoliczka, *J.A.S. Bengal*, **40** : 428, pl. 25, figs. 9-12 (Andaman Is; Calcutta).

1943. *Typhlops andamanensis*, Smith, *Fauna Brit. Ind.*, : 56.

It is a small worm snake in which length scarcely exceeds 160 mm. Its snout is strongly projecting and rounded; nostrils lateral; rostral 1/3 of head in breadth, extends up to the level of eyes; nasals are distinctly divided, the lower suture passes to the second labial; posterior nasal shield is larger than the ocular and preocular shields, which are separated from the labials by two smaller shields, the one lies below the ocular shield and touch the third and fourth labials, but it is not wedged between the two labials; eyes are not distinct; rostral and prefrontal shields are in contact; tail is obtuse and bears a spine at the end; scales round the body are 18; total length of the snake is between 17 to 20 times of the diameter of its body. Dorsal colouration is Dark-brown or blackish; lateral aspects vinacious, lower side is light brown and chequered with white; mouth and region below the tail is white.

*Distribution* : India : Andaman Is.

*Status* : It is a rare snake, the only specimen on which description is based is now not traceable.

#### BEAKED BLIND SNAKE

##### 18. *Typhlops acutus* (Dumeril & Bibron 1844)

1844. *Onychocephalus acutus* Dum. & Bibr., *Erp. Gen.*, **6** : 333.

1943. *Typhlops acutus*, Smith, *Fauna Brit. Ind.*, : 56-57.

This is the largest species among the worm snakes, reaches upto a length of 600 mm. Its body is long, slender and cylindrical, snout is pointed and forms a hooked

beak like strongly projecting structure, with sharp horizontal edge; nostrils are inferior; rostral shield is very large, covers most of the dorsal aspect of head and reaches behind almost to the level of eyes; nostril is quite close to the rostral and sutures pass from it to the second labial as the anterior nasal is a minute scale; a single long and narrow preocular is present; a subocular shield is present, which touches the third and fourth labials; eyes are generally located in distinct ocular shields, which remain in contact with the nasal; prefrontal and supraocular are the distinct shields and both are three to four times broader than long, prefrontal is in contact with the rostral; tail ends into a spinose structure; scales round the body are 28-34; total length of the snake is between 40-60 times of the diameter of its body; 450-500 transverse rows of scales on the whole body length. Dorsal colouration is brown, ventrum is light brown; in many individuals dorsal and lateral scales are with a light yellow centre.

*Distribution* : India : Gujarat (Surendranagar, Vadodara and Dangs districts); Peninsular India; Bihar; Orissa and West Bengal. This is absolutely an endemic Indian species.

*Habits and habitat* : This is a nocturnal burrowing snake leading subterranean life hiding under stones, decaying vegetation and wooden logs etc. Its terminal spine on tail and hook on the snout help the snake in locomotion; these are stuck into the ground, thus aiding the snake in its progression. Its food comprises worms, soft insects and their larvae. It is oviparous and 4-6 eggs are laid in a single clutch in April or May.

*Status* : Nowhere common, but not endangered.

Family II. LEPTOTYPHLOPIDAE Stejneger 1891  
(Text fig. 37)

1891. *Leptotyphlopidae* Stejneger, *Proc. U.S. Nat. Mus.*, **xiv** : 501.

1943. *Leptotyphlopidae*, Smith, *Fauna Brit. Ind.*, **3** : 59.

This interesting family includes the small degenerate burrowing snakes popularly called as "Thread snakes", bearing a superficial resemblance with the burrowing worm snakes of family Typhlopidae but can be differentiated from them as their nasal and ocular shield border the lip and possess an enlarged preanal plate and by having 14 scales round the body. This family is characterised by having uniform cycloid scales covering the dorsal and ventral aspects of body; vestigial eyes; upper jaw is devoid of teeth; presence of coronoid bone in lower jaw; pterygoid and maxilla do not form a connection through ectopterygoid; pterygoid bone not reaching upto quadrate bone; vestiges of the pelvis and femur are present; maxilla forms a strong union with the cranium; prefrontal bone forms a contact with the nasal bone; supratemporal bone is vestigial, quadrate bone is flat, long and slants forward.

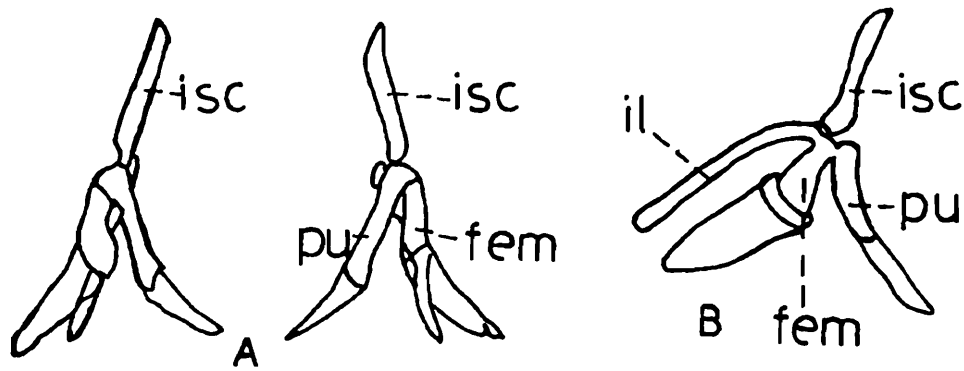


Fig. 37. Pelvic girdle of *Leptotyphlops distanti*. A. Ventral view of girdle. B. Lateral view of right half of girdle.

These snakes are strong burrowers and form zig-zag and branched tunnels in the soil and are the strong predators on white ants and small arthropods. The family includes 2 genera and 50 species distributed in Africa, South-West Asia, Southwest U.S.A. to Argentina and other parts of tropical America. In Indian Region only two species as described below are available.

#### Genus 2. *Leptotyphlops* Fitzinger 1843

1843. *Leptotyphlops* Fitzinger, *Syst. Rept.*, : 24 (type *nigricuns*).

1943. *Leptotyphlops*, Smith, *Fauna Brit. Ind.*, 3 : 60.

The main generic characters are that rostral, nasal, and ocular shields are quite large and all of them form the border of the lip. All the shields of head and preanal shield are enlarged. Scales round the body are 14.

#### Key to the species of genus *Leptotyphlops*

Snout is hooked with a concave lower surface; total length of snake is between 80-110 times of the diameter of its body ..... *Leptotyphlops macrorhynchus*

Snout is rounded; total length of snake is between 55-80 times of the diameter of its body ..... *Leptotyphlops blanfordi*

#### BEAKED THREAD SNAKE

19. *Leptotyphlops macrorhynchus* Jan. 1862

(Text fig. 38)

This Thread snake is slender with prominent, hooked snout, the lower surface of which (in front of the mouth) is concave and reaches to a maximum length of 300 mm. (Standard length 280 mm., tail 20 mm.). Head is two times broader than the rostral, which generally extends to the level of the eyes; nasal shield is completely divided and inferiorly form a border with the lip; ocular shields are distinctly enlarged forming

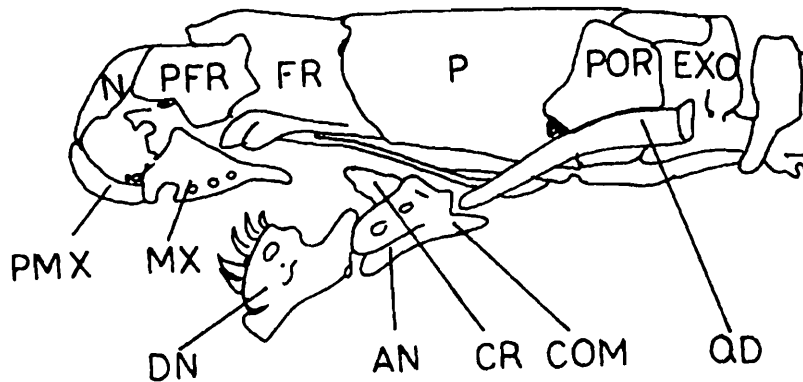


Fig. 38. Skull : *Leptotyphlops macrorhynchus* (Beaked thread snake)

the border between the two labials, eyes are distinctly visible and are placed in the ocular shields; all the head shields are considerably enlarged; scales round the body are 14; total length of the snake is between 80-110 times of the diameter of its body. Dorsal colouration is brownish with a pink tinge; ventrum is slightly paler.

*Distribution* : India : Jodhpur district, Rajasthan.

*Elsewhere* : Pakistan : Sind (near Karachi), Baluchistan (Auetta); Iran (Jask); Arabia; Africa (Sudan, Egypt).

*Habits and habitats* : These are the fast burrowing snakes, which form interconnected tunnels in the termite infested areas. Their main food comprises the termites and soil arthropods and their eggs.

*Status* : Available in sufficient numbers.

#### BLANFORD THREAD SNAKE

##### 20. *Leptotyphlops blanfordi* (Boulenger 1890)

(Text fig. 39)

This most active snake is having a close resemblance with *Leptotyphlops macrorhynchus* in general scalation but differs in having a comparatively rounded snout without any concavity on the inferior aspect; body is not slender but comparatively more robust; total length of the snake reaches to a maximum length of 260 mm. (Standard length 240 mm.; tail 20 mm.), it is between 55-80 times of the diameter of its body). Dorsal colouration is pinkish, ventral part is comparatively lighter.

*Distribution* : India : Punjab (Amballa); Gujarat (Khavda).

*Elsewhere* : Pakistan : Punjab (Multan); N.W.F.P. (Jamrud Terah); Baluchistan (Sibi; Koh-i-Malik Siah in extreme north-west corner); Sind (Kotri, Hyderabad).

*Habits and habitats* : It is a most active snake and leads a subterrenian life making burrows under the stones on soft loose soil. Food comprises the small soil

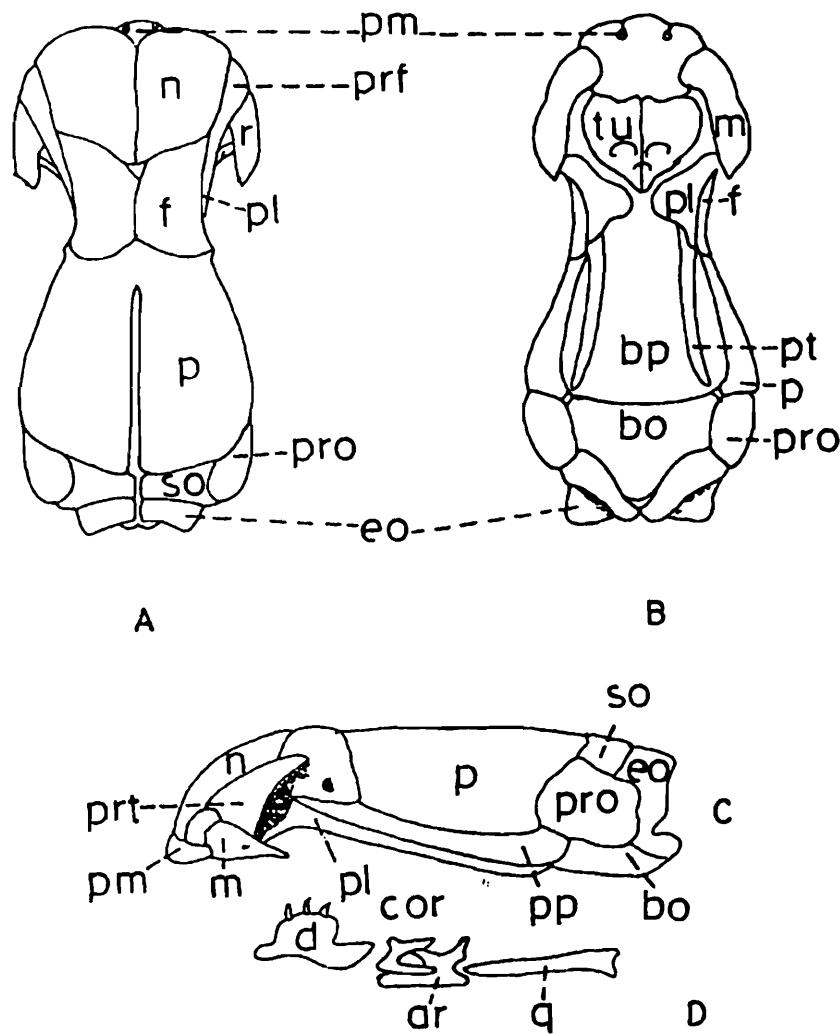


Fig. 39. Skull : *Leptotyphlops blanfordi* A. Dorsal view, B. Ventral view, C. Lateral view, D. Outer view of left mandible ar., articular; bo., basioccipital; bp. basisphenoid; cor., coronoid; d., dentary; co., exoccipital; f., frontal; m., maxilla; n., nasal; p., parietal; pl., palatine; pm., premaxilla; prf. prefrontal; pro., prootic; pt., pterygoid; q., quadrate; so., supraoccipital; tu., turbinal.

arthropods and mainly the termites. Its breeding records are not available but according to Minton 1966 one 186 mm long female contained an egg 25 mm long and 2.5 mm in diameter.

*Status* : Nowhere common but not endangered.

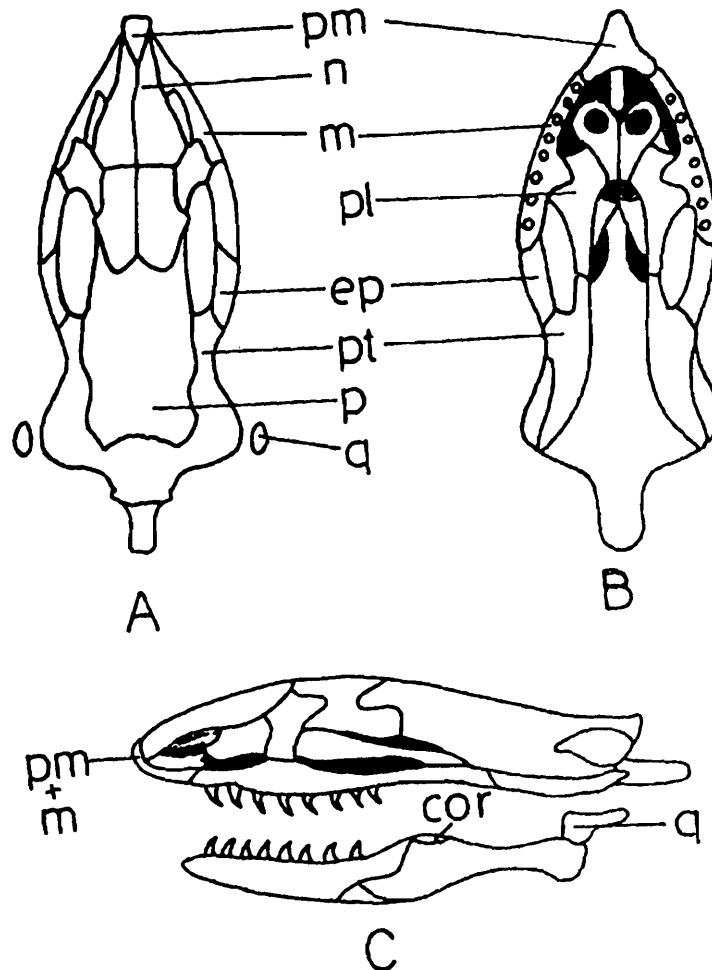
### Family III. UROPELTIDAE Gray 1845 (Text fig. 40)

1845. *Uropeltidae* Gray, *Cat. Liz. Brit. Mus.*, : 140.

1943. *Uropeltidae*, Smith, *Fauna Brit. Ind.*, : 61.

1967. *Uropeltidae*, Underwood, *Cont. Classi. Snakes*, : 64.

In the snakes called Uropeltis or Rough-tails the head is not distinct from neck; body is short and cylindrical and is covered with smooth scales; ventral scales are slightly larger than the dorsal scales; tail is quite short and its end is transformed into a large, file like naked shield; eyes are quite small and with a round pupil; mouth is comparatively small; skull bones are firmly united; maxilla with 6-8 uniform teeth; palatine with 3-4 minute teeth; prefrontal is suturally articulated with nasal and the maxilla; the maxilla is fixed and suturally articulated with the premaxilla; supratemporal is small or absent; postorbital is not present; the quadrate is very short and vertically placed; coronoid bone is present in the mandible, with 8-10 teeth; ectopterygoid bone is present which connects the pterygoid with the maxilla; the occipital bones are firmly connected to one another and to prootic and the basisphenoid; occipital condyl projects much beyond the back of the skull; vestigial pelvis may be present, it is formed by three bones, in many cases pelvis is not present; supralabials are 4 in number; loreal scale is not present; hemipenis is very small; these snakes are viviparous. These snakes with strong fossorial habits are confined to the Peninsular Indian and Sri Lanka. They feed on earthworms and insects. The family is distributed in 7 genera and about 44 species (35 species in 7 genera are available in India).



**Fig. 40.** Skull : *Uropeltis* A. Dorsal view, B. Ventral view and C. Lateral view.

### Key to the genera of Family UROPELTIDAE

- I. If a mental groove is present ..... *Melanophidium*
- II. Mental groove is not present.
- A. Eyes are distinct from the surrounding shields. Tip of the tail with a depressed scute with lateral ridges ..... *Platyplectrurus*
- B. Eyes are not distinct from the surrounding shields. Tip of the tail with a simple, compressed scute, devoid of ridges ..... *Teretrurus*
- Tip of the tail with a scute which ends into two superposed points, which may be simple or compound ..... *Plectrurus*
- Tail usually obliquely truncate, the truncated portion covered with thickened differentiated scales; tip of the tail is with a scute which either ends in a transverse ridge or in two points side by side ..... *Uropeltis*
- Tail ends in a convex or flattened rounded rugose shield ..... *Rhinophis*
- Tail ends in a large, subtriangular, flat, spinose shield above .....  
..... *Pseudotyphlops*

#### Genus 3. *Melanophidium* Gunther 1864

1864. *Melanophidium* Gunther, *Rept. Brit. Ind.*, : 193 (type *wyinaudense*).

1943. *Melanophidium*, Smith, *Fauna Brit. Ind.*, : 65.

A mental groove is present. Eyes are in the ocular shields; supraocular or temporal shields are not present; tail feebly compressed; tail scales are smooth; tip of the tail bears a scute with lateral or superior ridges; scales round the body are in 15 rows.

#### Key to the species of genus *Melanophidium*

- I. Suture between the ocular and frontal shields is less than 1/3 the length of the frontal shield. Ventrals and outer 2-3 body scale rows are white and bear a black central spot ..... *Melanophidium punctatum*
- Ventrum is absolutely black, with broad white stripes on each lateral aspect.  
..... *Melanophidium bilineatum*
- II. Suture between the ocular and frontal shields is more than 1/3 the length of the frontal shield. Complete body is black, with or without yellow spots on the ventrum  
..... *Melanophidium wyinaudense*

## TRAVANCORE MELANOPHIDIUM

21. *Melanophidium punctatum* Beddome, Madras  
(Text fig. 41)

1871. *Melanophidium Punctatum* Beddome, *Madras Monthly J. Med. Sci.*, : 401 (Travancore; London).

1943. *Melanophidium punctatum*, Smith, *Fauna Brit. Ind.*, : 66.

This uropeltid snake reaches to the maximum length of 560 mm and the diameter of the body of a fully grown adult is between 14-16 mm. Its snout is obtusely pointed; rostral is small, its upper visible part is equal to or less than  $\frac{1}{2}$  of the distance between it and the frontal shield; frontal shield is longer than its width and it is most variable in size; the length of the suture between frontal and the supraocular is 3 or

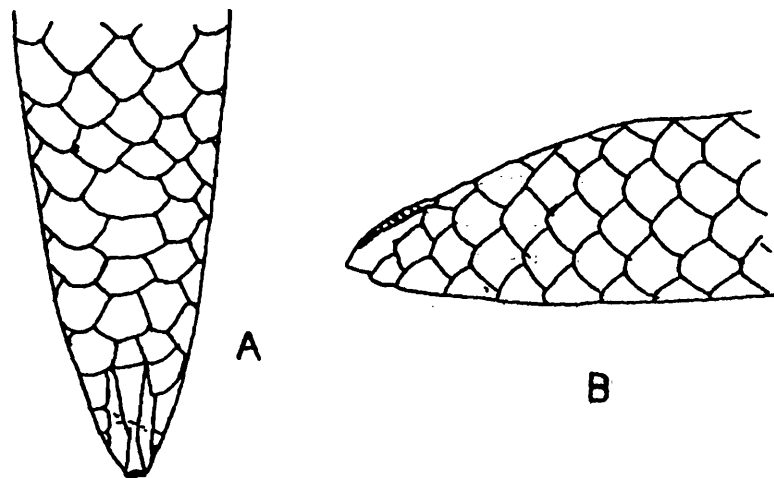


Fig. 41. Tail of *Melanophidium punctatum* A. Dorsal view, B. Lateral view.

4 times than the length of the frontal; eye is  $\frac{1}{3}$  of the length of the ocular shield; Ventral shields are between 180-198, almost two times broader than the adjacent scales; subcaudal scales are 11-18. Tail is compressed, caudal scales are smooth; upper surface of the tail end is with a ridged scute, ridges are parallel and two in number and form 2-4 points at the tip, in juvenile snakes this scute is simply form a point and is devoid of ridges. Dorsal colour is black, ventrals and outer 2-3 scale rows are white with black central spots.

*Distribution* : India : Kerala (Hilly areas 4000-5000 feet), Anaimalai Hills; Goa (Telewady).

*Status* : Available in sufficient number.

## PERIA-TIRRHIOOT MELANOPHIDIUM

22. *Melanophidium bilineatum* Beddome 1870

1870. *Melanophidium bilineatum* Beddome, *Madras Monthly J. Med. Sci.*, : 169 (Wynaad—This is a highland area between Coorg and Nilgiri Hills, not found in recent atlases, London).

1943. *Melanophidium bilineatum*, Smith, *Fauna Brit. Ind.*, : 66.

This species is quite similar to *M. punctatum* but differs in having smaller eyes; diameter of body is 1/4 of the ocular shield in length; ventral shields are comparatively broader and two times broader than the adjoining scales; ventral shield 188-200; subcaudals 15-17; tail scute is pointed and devoid of ridges. Complete body is black, lower and upper parts are demarked by a broad yellow strips, many snakes possess a series of small black spots. Total length 550 mm, diameter of body 14 mm.

*Distribution* : India : Coastal hilly area between Coorg and Nilgiri Hills (Peria and Tirrhoot Peaks, West Manantoddy).

*Status* : A rare snake, known by 3 juvenile specimens.

#### WYNAD MELANOPHIDIUM

##### 23. *Melanophidium wynaudente* (Beddome 1863)

1863. *Melanophidium wynaudente* Beddome, P.Z.S., : 228 (near Manantoddy; London).

1943. *Melanophidium wynaudente*, Smith, *Fauna Brit. Ind.*, : 67.

This snake is having close similarity with *Melanophidium punctatum* but differ in the following characters : The suture between the ocular and frontal is more than 1/3 of the length of the frontal shield; eye are comparatively smaller; ventral shields 170-185; subcaudal shields 10-18; terminal caudal scute is with two superposed lateral ridges which meet on a transverse ridge at the tip of tail. Most of the snakes are completely black, many individuals are with large white or yellow spots on the ventral aspect. Total length 440 mm, diameter of body 10 mm.

*Distribution* : India : South India (Manantoddy district; Coorg 300-5000 feet).

*Status* : It is a rare snake.

#### Genus 4. *Platyplectrurus* Gunther 1868

1868. *Platyplectrurus* Gunther, *Ann. Mag. Nat. Hist*, (4)i : 414 (type *trilineatus*).

1943. *Platyplectrurus*, Smith, *Fauna Brit. Ind.*, : 67.

Mental groove is missing; eyes are quite distinct from the surrounding shields; distinct supraocular, postocular and temporal shields are available; tail is compressed, with moderately smooth scales; terminal scute is depressed and bear well developed lateral ridges which meet in a point; scales round the body are in 15 rows.

#### Key to the species of genus *Platyplectrurus*

Prefrontal shields are smaller than the supraocular shields; three black longitudinal lines on the dorsal aspect .....*Platyplectrurus trilineatus*

Prefrontal shields are not smaller than the supraocular shields; dorsum is purplish brown .....*Platyplectrurus madurensis*

## ANAIMALAI REDDISH-BROWN WORM SNAKE

24. *Platyplectrurus trilineatus* Beddome 1867

1867. *Plectrurus trilineatus* Beddome, *Madras Quart. J. Med. Sci.*, : 14, fig. (Anamallays; London).

1943. *Platyplectrurus trilineatus*, Smith, *Fauna Brit. Ind.*, : 68.

This worm like uropeltid snake reaches to a maximum length of 390 mm and the diameter of its body is about 11 mm. Its snout is obtusely pointed, rostral shield is quite small; frontal shield is longer than broad, shorter than the parietal shields; prefrontal shields are shorter than the ocular shields; ventral shields 163-175, one and a half times as broad as the adjacent scales; subcaudal shields are 8-16; tail is compressed, with smooth scales, with a depressed terminal scute and flat on the lower side; each lateral aspect of the tail is with a distinct ridge, both the lateral ridges meet at a point; a less distinct ridge is present on the mid-dorsal aspect of the tail; in the males the scute is larger and the ridges are more prominent in comparison to the females. Adult snakes are reddish-brown or brick-red above with three black longitudinal lines which may be interrupted at places, in many individuals the vertebral line is missing; ventrum is light brown, edge of each scale being whitish. In young ones the dorsal lines are more brilliant and distinct, head is dark brown, with a light brown spot on each side of the neck.

*Distribution* : India : Anaimalai Hills, hilly areas of Kerala.

*Status* : Available in sufficient numbers.

## PALNI PURPLE-BROWN, SNAKE

25. *Platyplectrurus madurensis* Beddome 1877

(Text figs. 42 & 43)

1877. *Platyplectrurus madurensis* Beddome, *P.Z.S.*, : 167 (Palni hills; London).

1943. *Platyplectrurus madurensis*, Smith, *Fauna Brit. Ind.*, : 69.

This species which reaches to a maximum length of 440 mm has got a close similarity with *Platyplectrurus trilineatus* but differs in having a shorter frontal which is always shorter than the parietal shields; prefrontal shields are not smaller than supraocular shields in length; ventral shields 158-175; subcaudal shields 10-15; diameter of body is 13 mm. Dorsum is purplish-brown; ventrum is purplish-brown at the edges and whitish in the middle.

*Distribution* : India : Palni Hills and hills of Kerala, 4000-6000 feet.

*Status* : Available is sufficient number.

Genus 5. *Teretrurus* Beddome 1886

1886. *Teretrurus* Beddome, *Ann. Mag. Nat. Hist.*, 17 : 28 (type *sanguineus*).

1943. *Teretrurus*, Smith, *Fauna Brit. Ind.* : 69.

Main generic characters are that mental groove is missing; eye may or may not be distinct from the surrounding shields; a supraocular shield may or may not be present; a temporal shield is always present; tail is compressed to a lesser or higher degree; tail scales may be smooth or feebly multicarinate; terminal tail scute is always present, it is simple, compressed and pointed, body scales are in 15 rows.

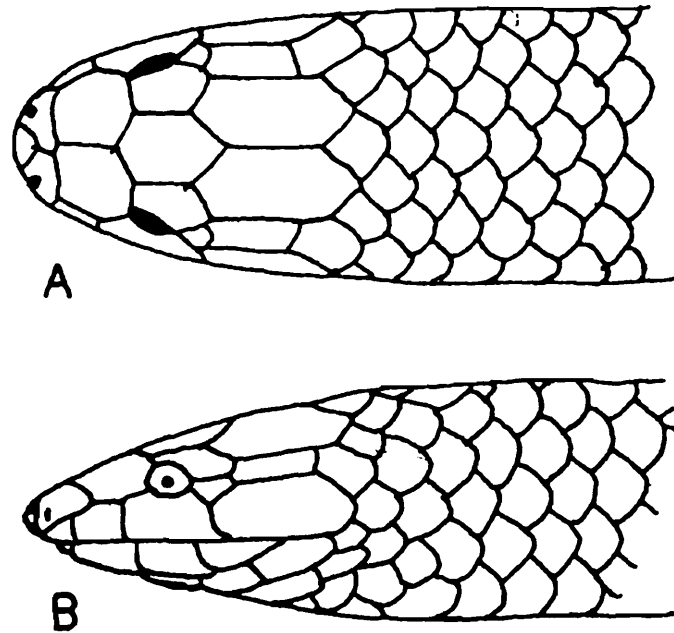


Fig. 42. *Platyplectrurus madurensis* Beddome A. Dorsal view of head. B. Lateral view of head.

### Key to the species of Genus *Teretrurus*

- A supraocular and a temporal shield is always present.....  
 ..... *Teretrurus sanguineus*  
 There is no supraocular shield ..... *Teretrurus rhodogaster*

### ANAIMALAI TERETRURUS

#### 26. *Teretrurus sanguineus* (Beddome 1867)

1867. *Plectrurus sanguineus* Beddome, *Madras Quart. J. Med. Sc.*, : 14, fig. (Anamallays; London).

1943. *Teretrurus sanguineus*, Smith, *Fauna Brit. Ind.*, : 69.

This small uropeltid snake reaches to a maximum length of 230 mm. with a body diameter of 9 mm. Its snout is obtuse and rounded; rostral shield is clearly visible form above but it is not longer than the distance between it and the prefrontal shield; frontal shield is as long as the parietal shields and much longer than its width; temporal, supraocular and postocular shields are present; eyes are distinct and more

than half the length of the ocular shields; ventral shields are 120-150, these are two times as broad as the adjacent scales; subcaudal scales are 5-9; tail is compressed, in females caudal scales are smooth or feebly bi- or tricarinate but in males all the caudal scales and last ventral scales are multicarinate; terminal tail scute is simple, compressed, may be smooth or with minute tubercles and ends into a single point. Dorsal colouration is brownish or purplish red; ventrum may be uniformly red or may be having black spots or blotches at places.

*Distribution* : India : Wynaad (highland area between Coorg and Nilgiri Hills); Anaimalai Hills, Kerala (300-7400 feet).

*Status* : Not common but not endangered.

### PALNI TERETRURUS

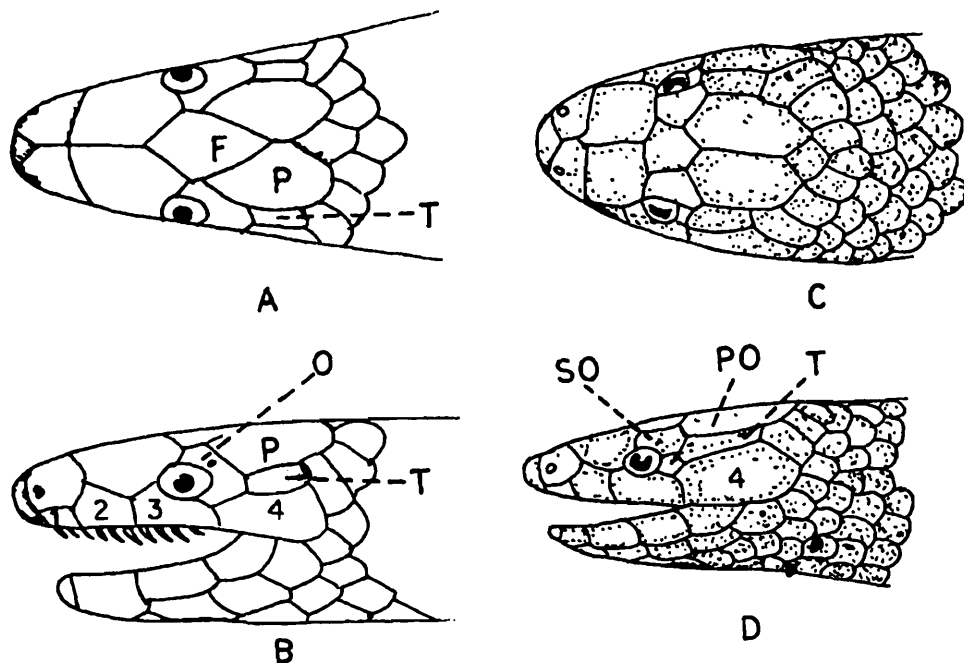
#### 27. *Teretrurus rhodogaster* (Wall 1921)

(Text fig. 43)

1921. *Brachyophidium rhodogaster* Wall, J.B.N.H.S., 28 : 4 (Palni Hills; London).

1943. *Teretrurus rhodogaster*, Smith, *Fauna Brit. Ind.*, : 70.

This small uropeltid with subacuminate snout hardly exceeds 210 mm in total length and with a body diameter of 7 mm. Rostral shield is small and its visible portion from above is less than the diameter between it and the prefrontals; prefrontals are distinctly longer than the nasal shields; frontal shield is longer than the parietal shields and it is much longer than its width; supraocular and postocular shields unite to form a single



**Fig. 43.** *Teretrurus rhodogaster* (Wall). A. Dorsal view of head. B. Lateral view of head. *Platyplectrurus madurensis* Beddome C. Dorsal view of head D. Lateral view of head F., frontal; P., parietal; Po., postocular; So., supraocular, T., temporal; 1, 2, 3, 4, 1st to 4th supralabials.

large shield; a distinct temporal shield is present; diameter of the eye is almost 1/2 of the length of ocular shield; ventrals are 139-145, two times broader than the adjacent body scales; subcaudal scales are 7-10; tail is moderately compressed, its dorsal scales are smooth or feebly bi- or tricarinate; terminal tail scute is simple, compressed and ends into a point. Dorsal colour is blackish-brown; ventrals and outer row of scales are red in living snakes but fades to white in alcohol, in preserved specimens.

*Distribution* : India : Tamil Nadu (Palni Hills).

*Status* : A rare snake.

#### Genus 6. *Plectrurus* Dumeril 1851

1851. *Plectrurus* Dumeril, *Cat. Coll. Rept.*, : 224; Dum. & Bibr., *Erp. Gen.* 7, 1854, : 166 (type *perroteti*).

1943. *Plectrurus*, Smith, *Fauna Brit. Ind.*, : 71.

Mental groove is missing; eyes are not distinct than the surrounding shields; supraocular shield may be present or absent in certain species; temporal shield is not present; tail is compressed, with keeled scales; terminal scute of the tail is compressed, with 2 superposed, simple bifid or trifid points; scales of body in 15 rows.

#### Key to the species of genus *Plectrurus*

- I. Supraocular shield is distinct, not united with the ocular shield.
  1. Terminal tail scute ends in two simple points ..... *Plectrurus perroteti*
  2. Terminal scute ends in two bi- or tricuspoid transverse ridges.
    - (i) Dorsal colour is uniformly Reddish-purple ..... *Plectrurus guentheri*
    - (ii) Dorsal colour is Golden, with black spots or narrow cross-bars .....  
..... *Plectrurus aureus*
- II. Supraocular shield is united with the ocular ..... *Plectrurus canaricus*

#### NILGIRI BROWN MUD-SNAKE

#### 28. *Plectrurus perroteti* Dumeril & Bibron 1854

1854. *Plectrurus perroteti* Dum. & Bibr. *Erp. Gen.*, : 167, pl. 59, fig. 4 (Nilgiris, Paris).

1943. *Plectrurus perroteti*, Smith, *Fauna Brit. Ind.*, : 71.

The maximum length of this mud-dwelling uropeltid reaches upto 440 mm with a body diameter of 11 mm. Other taxonomic characters are : Obtusely pointed snout; rostral is small, its portion visible from upper side is shorter than the distance between it and the frontal, length of the frontal shield is much more than its width, it is almost equal to the parietal shield in length; supraocular shield is quite small, its length is

two times of its width; diameter of the eyes is almost half of the length of the ocular shield; ventral shields are 152-180, one and a half times as broad as the adjoining body scales; subcaudal scales, are 6-12; tail is compressed with multicarinate scales; terminal tail scute is compressed, tuberculate and ends in 2 simple superposed points. Dorsum is brown or dark purple with a brownish tinge; ventrum colouration is almost same but is little lighter than the dorsal colouration, in many individuals ventrum scales are with reddish or yellowish central dots; in juveniles generally a yellow line is present on the dorsal aspect of the tail.

*Distribution* : India : Tamil Nadu (Nilgiri and Anaimalai Hills).

*Habits and habitats* : This is a high mountain dwelling snake, which burrows in the accumulated muddy soil of the hill crevices and pits on the hill slopes between 4500 to 6000 feet. Food comprises worms, insects, other arthropods and their larvae. It is a viviparous snake, gives birth to 3-6 young at a time; its breeding season extends from March to September.

*Status* : A common species throughout its range.

#### SISPARA REDDISH-PURPLE MUD-SNAKE

##### 29. *Plectrurus guentheri* Beddome 1863

1863. *Plectrurus guentheri* Beddome, *P.Z.S.*, : 228, pl. 27 Walaghat, (W. Nilgiris; London).

1943. *Plectrurus guentheri*, Smith, *Fauna Brit. Ind.*, : 72.

Other characters, Head shield etc. are similar to *Plectrurus perroteti* except, diameter of eye is almost 1/2 of the length of the ocular shield; ventral shields 171-175, width is 1/3 to 1/2 times the width of the adjacent body scales; subcaudal shields are 10-12; tail is moderately compressed, with multicarinate scales; terminal scute of tail is with two superposed bi- or tricuspid transverse ridges. The maximum length of the snake reaches upto 375 mm and the diameter of body is 9 mm. Dorsal colour bright reddish-purple, yellow triangular markings on lateral aspects and belly, in certain snakes these triangular markings are present across the belly.

*Distribution* : India : Tamil Nadu (Sispara Ghat, Western Nilgiri Hills).

*Status* : A rare snake.

#### CHAMBRA-HILL MUD-SNAKE

##### 30. *Plectrurus aureus* Beddome 1880

(Text fig. 44)

1880. *Plectrurus aureus* Beddome, *P.Z.S.*, : 182 (Chambra Hill; London).

1943. *Plectrurus aureus*, Smith, *Fauna Brit. Ind.*, : 72.

Similar to *Plectrurus guentheri* in taxonomic characters; total length 400 mm, diameter of body 9 mm, ventral shields 164-177; subcaudal shields 8-12. Dorsum is golden; ventrum is comparatively lighter; the dorsal scales except the outer one or

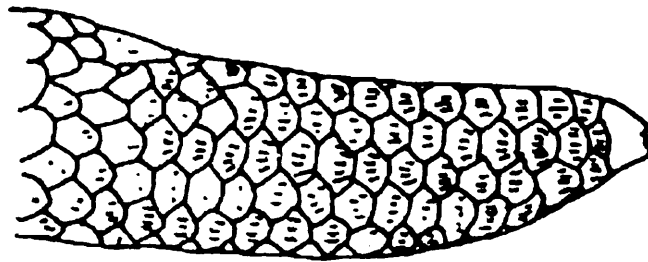


Fig. 44 *Plectrurus aureus* Beddome. Lateral view of tail.

two rows are edged with violet; back with narrow irregular violet-black crossbars or spots, scattered at places; ventrum is profusely ornamented by violet-black cross-bars or alternating spots.

*Distribution* : India : Kerala (Chambra Hills).

*Status* : A rare snake.

#### CANARA VIOLET MUD-SNAKE

##### 31. *Plectrurus canaricus* (Beddome 1870)

1870. *Silybura canarica* Beddome, *Madras Month. J. Med. Sci.*, : 170 (Kudra Mukh, near Mangalore; London).

1943. *Plectrurus canaricus*, Smith, *Fauna Brit. Ind.*, : 72.

This mud snake reaches to a total length of 430 mm and the diameter of body 10 mm, its snout is obtusely pointed; rostral shield is small, the portion which is visible from above is shorter than the distance between it and the frontal; length of the frontal shield is much more than its width, this may be equal or longer than the parietal shields; supraocular shield is not present; diameter of the eye is  $\frac{1}{3}$  of the length of the ocular shield which surrounds the eye completely; ventral shields are 172-188, these are less than two times broader than the adjoining body scales; subcaudal shields are 6-13; tail is compressed, with smooth or feebly multicarinate scales; terminal tail scute ends into two superposed points (in certain individuals the scute ends into a single point, which may or may not be bifid). Dorsal colour is brownish-violet, centre of scales is paler, with or without small yellow spots on the back; yellow spots on lateral aspects of anterior portion of body; lips are yellow; ventrum including the tail region is yellowish, with or without a black median line; a light streak on the mid-dorsal region of tail is available in many individuals.

*Distribution* : India : Karnataka (South Kanara, Mysore 6000 ft.)

*Status* : Available in sufficient number.

#### Genus 7. *Uropeltis* Cuvier 1829

1829. *Uropeltis* Cuvier, *Regne. Anim.* 2nd ed., 2 : 76.

1943. *Uropeltis*, Smith, *Fauna Brit. Ind.*, : 73.

Eyes are situated in ocular shields : devoid of supraocular and temporal shields; mental groove is missing, tail is cylindrical or obliquely truncate; the terminal scute ends into two points side by side or simply a transverse ridge.

### Key to the species of genus *Uropeltis*

- I. Truncated oblique upper part of tail small, convex (not flat) and is covered with thickened, multicarinate scales.

#### Scales in 17 rows

1. Visible rostral part equals the distance between it and the middle of frontal shield.
- (i) Colour is brown, small yellow spots on ventrum; ventral shields 144-176.....  
..... *Uropeltis ellioti*
- (ii) Colour is black, large yellow spots on Ventrums; ventral shields, 184-195 .....  
..... *Uropeltis nitidus*
- (iii) Colour is brown with a transverse series of yellow, black-edged spots; ventral shields, 185-234 ..... *Uropeltis ocellatus*
2. Visible rostral part longer than the distance between it and the middle of frontal shield. Rostral shield is ridged.
- (i) Belly brown with yellow spots; Ventrals, 155-168..... *Uropeltis dindigalensis*
- (ii) Belly lighter-brown, with yellow spots on posterior margin; ventrals, 180-188  
..... *Uropeltis beddomei*
- (iii) Belly brownish-yellow, yellow colour confined to the posterior half of the scales; Ventrals, 203-213 ..... *Uropeltis macrorhynchus*

#### Scales in 19 rows

Series of large yellow spots on lateral aspects extending across the belly; ventrals, 166-183 ..... *Uropeltis woodmasoni*

- II. Truncated oblique upper part of tail large, flat or concave and is covered with thickened bi-, tri- or multicarinate scales.

#### Scales in 15 rows

Ventral shields 127-140 ..... *Uropeltis macrolepis*

#### Scales in 17 rows

1. Visible rostral portion not or not much longer than its distance from the frontal shield.
- (i) Belly yellowish or brown or yellow and brown, ventrals, 119-146 .....  
..... *Uropeltis ceylanicus*

- (ii) Belly yellowish, with large black or brown blotches or cross-bars, ventrals, 127-128 ..... *Uropeltis arcticeps*
  - (iii) Three to six large red spots on each lateral aspect of the front part of body and 2 on the tail; ventrals, 127-136 ..... *Uropeltis rubramaculatus*
  - (iv) A broad yellow or red stripe along each side of the body; ventrals, 165-172 ....  
..... *Uropeltis rubrolineatus*
2. Visible rostral portion is distinctly longer than its distance from the frontal shield
- (i) A yellow line along each lateral aspect of the front portion of body; Ventrals, 138-157 ..... *Uropeltis phipsoni*
  - (ii) Ventrals is yellowish with dark spots or cross-bars, Ventrals, 139-156 .....  
..... *Uropeltis myhendrae*

#### **Scales in 19 rows**

Rostral shield extends posteriorly, almost separating the nasals. ....  
..... *Uropeltis broughami*

- III. Tail is moderately compressed, rounded on dorsal aspect, where the scales are keeled or smooth.

#### **Scales in 17 rows**

1. Snout obtuse; nasal shields are not completely separated by the rostral.
- (i) Body is black, with large red spots on the lateral aspects of neck and tail; Ventrals, 154-165 ..... *Uropeltis maculatus*
  - (ii) Body is brown, with small yellow spots on the Ventrals and on the sides, Ventrals, 151-180 ..... *Uropeltis petersi*
  - (iii) Body is purplish-brown with transverse series of yellow black-edged spots; Ventrals, 174-188 ..... *Uropeltis liura*
2. Snout pointed; nasal shields are completely separated by the rostral.
- (i) Belly is brown with yellow spots or cross-bars or it is completely yellow; Ventrals 161-180 ..... *Uropeltis pulneyensis*
  - (ii) Belly is black; yellow stripe on lateral aspect of body; Ventrals, 141-166 .....  
..... *Uropeltis melanogaster*
  - (iii) Belly is light bluish-gery, rostral as long as the distance between it and the hinder end of the frontal; Ventrals, 197-210 ..... *Uropeltis phillipsi*

#### **Scales in 19 rows**

In most cases nasals are not separated by the rostral shield .....  
..... *Uropeltis grandis*

ELLIOT'S UROPELTIS  
32. *Uropeltis ellioti* (Gray 1858)

1858. *Uropeltis ellioti* Gray, *Proc. Zool. Soc.*, 5 : 262.  
1861. *Silybura ellioti*, Peters, *Serp. Fam. Uropelt.*, : 21.  
1943. *Uropeltis ellioti*, Smith, *Fauna Brit. Ind.*, : 75-76.

This small cylindrical snake never exceeds 260 mm in total body length. Head is not differentiated from neck and snout is acute, pointed; eyes are distinct, with round pupils, about one-third to half the length of the ocular shield; 17 scales round the body; ventrals, 144-176, one and a half times broader than the adjacent body scales; caudal scales, 5-11; tail is quite short, obliquely truncate, the truncated part is not completely flat, the terminal disc is well marked and covered with thick, bi-, tri- or multicarinate scales; terminal scute is large, depressed, covered with small tubercles and ends into a two pointed transverse ridge. General body colouration is dark-brown with purple-blue tinge and with small yellow spots scattered all over; lateral aspects of neck and tail with yellow stripes; ventral aspect of the tail is yellowish, with a large brown spot behind the vent.

*Distribution* : India : Gujarat : Dangs district; Kerala : Western Ghats; Andhra Pradesh : Sirumalai Hills; Tamil Nadu: Madurai district.

*Habits and habitat* : A nocturnal, agile insectivorous species : leading a subterranean life, hiding under loose sand, mud, dried wooden logs, under stones on a muddy substratum and in decaying forest leaf litter.

*Status* : Rare.

ANAIMALAI UROPELTIS  
33. *Uropeltis nitidus* (Beddome 1878)

1878. *Silybura nitida* Beddome, *P.Z.S.*, : 154. (Anamallays; London)  
1943. *Uropeltis nitidus*, Smith, *Fauna Brit. Ind.*, : 76.

This moderately large cylindrical snake reaches to a total body length of 340 mm and diameter of body is about 10 mm, head is not differentiated from neck and snout is acutely pointed; eyes are distinct, their diameter never exceed than 1/2 the length of the ocular shield; visible portion of the rostral shield is as long as the distance between it and the middle of the frontal shield; extended posterior part of the rostral separates the nasal shields for more than half their length; body scales are in 17 rows; ventral shields are 184-195, slightly broader than the adjacent body scales; subcaudal shields are 5-11; tail end is feebly flat dorsally, without a properly formed disc; terminal tail scales are strongly multicarinate terminal tail scute is large, depressed, with small tubercles on dorsal aspect and ends into a transverse ridge with two points. Dorsal and ventral colouration is uniformly black or with distant

large yellow spots on the belly, which are arranged in alternate fashion in most snakes, but sometimes these spots unite and form cross-bars.

*Distribution* : India : Tamil Nadu (Anaimalai Hills, Cochin side, 4000-5000 feet).

*Status* : A rare snake.

#### NILGIRI UROPELTIS

##### 34. *Uropeltis ocellatus* (Beddome 1863)

1863. *Silybura ocellatus* Beddome, *P.Z.S.*, : 225 (Wala Ghat, Nilgiris; London).

1943. *Uropeltis ocellatus*, Smith, *Fauna Brit. Ind.*, : 76.

Shape is like the previous species, maximum total length of this large snake reaches up to 530 mm; diameter of body, 15 mm, eyes are distinct, their diameter is one-fifth to one-third the length of the ocular shield; visible part of rostral is as long as the distance between it and the middle of the frontal, separate the nasal shields for more than half their length; body scales are in 17 rows; ventral shield, 185-234, one and a half times as broad as the adjacent body scales; caudal shields, 6-11; tail end is slightly flat above, without a disc, terminal tail scales are multicarinate; terminal tail scute is large, depressed with small tubercles above and ends into a transverse ridge with two points. Dorsal colour is yellow or brown, with transverse series of small, yellow, black-margined ocelli; belly is brown with large yellow spots or cross-bars, in certain individuals the belly colour is yellow mottled or blotched with brown.

*Distribution* : India : Western Ghats south of Goa Gap; Tamil Nadu (Nilgiri and Anaimalai Hills).

*Habits and habitat* : It is a viviparous snake, 3-5 young are produced at a time.

*Status* : It is quite common, throughout its range.

#### DINDIGUL UROPELTIS

##### 35. *Uropeltis dindigalensis* (Beddome 1877)

1877. *Silybura dindigalensis* Beddome, *P.Z.S.*, : 167 (Sirumallays, near Dindigal; London).

1943. *Uropeltis dindigalensis*, Smith, *Fauna Brit. Ind.*, : 77.

This snake is moderately large, shape and disposition is like the other members of genus; total length 370 mm, diameter of body 12 mm; eye diameter is one-third the length of the ocular shield; snout is acutely pointed; visible part of the rostral shield is longer than the distance between it and the middle of the frontal, its extended posterior portion separated the nasal shield for more than half their length; body scales are in 17 rows; ventrals, 155-168; caudals, 5-10; tail is short, obliquely truncate but the truncated part is not completely flat; the terminal disc of tail is well marked and covered with thick bi- tri- or multicarinate scales; terminal tail scute is large, depressed, covered with small tubercles and ends into a two pointed transverse ridge. Dorsal

colouration is dirty yellow, speckled or spotted with brown; ventrum is dark brown with yellow spots or irregular cross-bars; lip is with a yellow streak which continues along each side of the neck; tail is yellow; a large brown spot behind the vent.

*Distribution* : India : Tamil Nadu (Sirumalai Hills, Madura district, 4000-5000 feet).

*Status* : A rare snake.

### BEDDOM'S UROPELTIS

#### 36. *Uropeltis beddomei* (Gunther 1862)

1862. *Silybura beddomei* Gunther, *Ann. Mag. Nat. Hist.*, (3)9 : 56 (Anamallays; London).

1943. *Uropeltis beddomei*, Smith, *Fauna Brit. Ind.*, : 78.

This is a small, slender snake never exceeds 250 mm. in total body length and the diameter of the body is about 7 mm. Its rostral shield is strongly ridged at dorsal aspect and projects strongly, thus making the snout acutely pointed; the visible portion of rostral is as long as the distance between it and the end of the parietal shields; rostral separates the nasal shield for more than half their length; eyes are small and their diameter is 1/3 the length of the ocular shields; body scales are in 17 rows; ventrals, 180-188, one and a third times as broad as the adjoining body scales; caudals are 6 or 7; tail is quite short, obliquely truncate, the truncated portion is not completely flat, terminal disc is well developed and covered with thick bi-, tri or multicarinate scales; terminal tail scute is large, depressed, covered with small tubercles and ends into a two pointed distinct transverse ridge. General body colouration is brownish, median dorsal part of body is with minute yellow spots, these are on the sides of the scales of 6-8 median dorsal rows of scales and form well defined longitudinal lines; ventrum is light brown with yellow spots, which are confined to the posterior margins of the scales; each side of neck is with a yellow streak; a distinct yellow bar across the anal region.

*Distribution* : India : Tamil Nadu (Anaimalai Hills).

*Status* : A rare snake, known by few examples.

### PONACHI UROPELTIS

#### 37. *Uropeltis macrorhynchus* (Beddome 1877)

1877. *Silybura macrorhynchus* Beddome, *P.Z.S.*, : 167 (above Ponachi; London).

1943. *Uropeltis macrorhynchus*, Smith, *Fauna Brit. Ind.*, : 78.

This is quite a large *Uropeltis*, whose total body length reaches upto 740 mm. with a diameter of body about 13 mm. The upper portion of its rostral shield is strongly ridged, it is strongly projecting thus forming an acute pointed snout, its visible portion is as long as the distance between it and the end of the parietal shields, it separates

the nasal shields for more than half their length; eyes are distinct and their diameter is  $1/4$  to  $1/3$  the length of the ocular shields; body scales in 17 rows; ventrals, 203-213; one and a third times as broad as the adjoining body scales; caudals are 6; tail is like *Uropeltis beddomei* or *Uropeltis ellioti*. Dorsal colouration is uniformly brown; ventrum is brown and yellow (confined to the posterior half of the scale); a yellow streak is quite distinct on mouth along each side of neck; yellow streaks on each side of the ventral aspect of tail, which unite to form a cross-bar on the anal portion.

*Distribution* : India : Tamil Nadu (Anaimalai Hills, 3000 to 4000 feet).

*Status* : Known by few examples, exact status is not known.

### PALNI UROPELTIS

#### 38. *Uropeltis wood-masoni* (Theobald 1876)

1875. *Silybura melanogaster* (not of Gray) Gunther, *P.Z.S.*, : 227, pl. 31, fig. A (Palni Hills; London); *Silybura wood-masoni* Theobald, 1876, *Cat. Rept. Brit. Ind.*, : 135 (Palni Hills; Calcutta).

1943. *Uropeltis wood-masoni*, Smith, *Fauna Brit. Ind.*, : 79.

A small *Uropeltis* with acutely pointed snout with a maximum body length of 270 mm and diameter of body about 10 mm; the visible part of the rostral shield is as long as or a little longer than the distance between it and the middle of the frontal and in most cases separates the nasal shields completely; diameter of the eye  $1/3$  to  $1/2$  the length of the ocular shield; body scales in 19 rows; ventrals, 166-183, one and a half times as broad as the adjacent body scales; caudals, 6-11; tail end is slightly flattened dorsally, disc is not well defined, terminal tail scales are strongly multicarinate; terminal tail scute is large, depressed, covered with small tubercles and ends into a two pointed transverse ridge. Dorsal colouration shows lot of variations, it may be uniformly black, brown or deep violet, may be with transverse series of large irregular bright yellow spots which generally extend across the belly, in many individuals the belly is entirely black.

*Distribution* : India : Tamil Nadu (Anaimalai, Palni and Nilgiri Hills); Kerala (Tinnevelly Hills).

*Status* : Commonly available.

### PETER'S UROPELTIS

#### 39. *Uropeltis macrolepis* (Peters 1861)

1861. *Silybura macrolepis* Peters, *Serp. Fam. Uropelt.*, : 904.

1935. *Uropeltis macrolepis*, Smith, *Fauna Brit. Ind.*, : 79.

This moderately large, cylindrical uropeltid snake reaches to a maximum length of about 300 mm; head is not differentiated from neck and snout is rounded; eyes are

distinct with round pupils, usually more than half the length of the ocular shield; 15 scales round the body; ventrals, 125-140, one and a half times as broad as the adjacent body scales; caudal scales, 7-10; tail is moderately long, one and a half to two times as long as broad; end of the tail is obliquely truncated above; the truncated part of the tail is flat or concave, covered with thickened bi- or tri carinate scales; forming a disc; terminal scute of tail is large, depressed, with small spines above, ending in a transverse ridge with two points. Body colouration is black to dark-brown with purple tinge, each scale is with a light margin; lips and sides of neck are with short, broad yellow or orange stripes which break up into large spots on the anterior part of the body; in certain individuals smaller spots are available throughout the whole length of the body; sides of the tail are with broad yellow or orange stripes; sometimes a broad orange stripe (occupying three scale rows) is available along each flank throughout the whole body.

*Distribution* : India : Gujarat : Dangs district; Kerala : Western Ghats.

*Habits and habitat* : A nocturnal, active insectivorous snake. During the day hides under the stones and wooden logs.

*Status* : Quite common in certain parts of its range like Mahableshwar during the rainy season.

#### CUVIER'S UROPELTIS

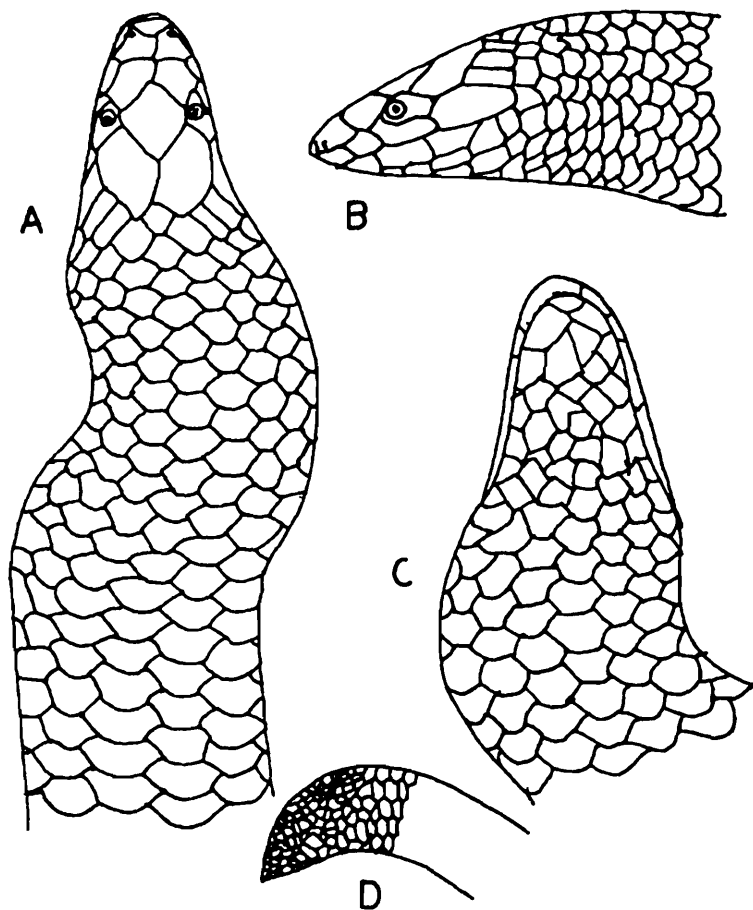
#### 40. *Uropeltis ceylanicus* Cuvier 1829

(Text fig. 45)

1829. *Uropeltis ceylanicus* Cuvier, *Reg. Amim.* 2nd ed., ii : 76 ("Ceylön", Paris).

1943: *Uropeltis ceylanicus*, Smith *Fauna Brit. Ind.*, : 80.

The maximum length of this moderately large *Uropeltis* reaches upto 455 mm with a body diameter of 15 mm. Its snout is obtusely pointed; visible portion of rostral shield is less than its distance from the frontal shield; eyes are distinct, their diameter is more than half the length of the ocular shield; body scales in 17 rows; ventrals, 119-146 and 1.5 times as broad as the adjacent body scales; caudals, 8-12; tail end is obliquely truncate above, the truncated part is flat or concave, covered with thickened bi- or tricarinate scales, forming a distinct disc which is 1.5 to 2 times as long as broad; terminal tail scute is large, depressed and with small spines on the dorsal aspect, ends into a transverse ridge with two points. Dorsal colour is uniformly brownish or blackish, in some snakes transversely arranged spots are available, a yellow lateral stripe is also present in few individuals; belly may be yellowish, with or without dark brown or black spots, or may be entirely brown or black; ventral tail surface is brown or may be black in the middle and yellow on the lateral aspects. Beddome's *Var. annulata* is with a brown dorsum and yellowish ventrum with narrow dark brown annuli.



**Fig. 45.** *Uropeltis ceylanicus* Cuvier A. Dorsal view of head and body B. Lateral view of head C. Ventral view of head D. View of tail.

*Distribution* : India : Western Ghats from Goa (Castle Rock) to Trivandrum; Shevaroy Hills.

*Status* : Most common snake in its range.

#### TINEVELLY UROPELTIS

##### 41. *Uropeltis arcticeps* (Gunther 1875)

1875. *Silybura arcticeps* Gunther, *P.Z.S.*, : 229, fig. (Tinevelly Hills; London).

1943. *Uropeltis arcticeps*, Smith, *Fauna Brit. Ind.*, : 81.

This moderately large snake reaches to the maximum body length of about 370 mm and 11 mm in body diameter. It is with a obtusely pointed snout and the visible part of the small rostral shield is almost equal (in some snakes shorter) than its distance from the frontal; diameter of the eye is  $\frac{1}{2}$  to  $\frac{1}{4}$  the length of the ocular shield; body scales are in 17 rows; ventrals 127-128, almost two times as broad as the adjacent scales; caudals, 8-10; tail end is obliquely truncated in dorsal aspect, the truncated part is concave and some what flat, covered with thickened bi- or tricarinate

scales and form a disc which is 1.5 to 2 times longer than its width; terminal tail scute is comparatively large, quite depressed and bear small spinose structures on the upper aspect, it ends into a well developed transverse ridge with two distinct points. Dorsum is black or purple-brown, in some individuals scales bear a yellow edge, yellow spots are present in few snakes; ventral colouration is yellow with an orange tinge, with large irregular spots or cross-bars, in some snakes the belly is completely black or purple-brown.

*Distribution* : India : Kerala : Western Ghats south of Palghat, Alleppey, Travancore Hills 5000 feet, tinnevely Hills.

*Status* : A common snake.

#### BEDDOM'S UROPELTIS

##### 42. *Uropeltis rubromaculatus* (Beddome 1867)

1867. *Silybura rubromaculatus* Beddome, Madras, *Quart. J. Med. Sci.*, 11 : 15, fig. and *J. Soc. Bibl. Nat. Hist.* i, 1940 : 316 (Anamallays; London).

1943. *Uropeltis rubromaculatus*, Smith, *Fauna Brit. Ind.*, 3 : 81.

Total length of this moderately large *Uropeltis* is not more than 380 mm and the diameter of the body is 12 mm. Its snout is obtusely pointed; visible portion of rostral shield is almost equal to its distance from the frontal shield; diameter of the eye is equal or slightly more than half the length of the ocular shield; body scales are in 17 rows; ventral, 127-136, about 1.5 times as broad as the adjoining body scales; caudals, 7-10; tail is like the *Uropeltis arcticeps* or *macrolepis*. Dorsum is dark brown, its hinder parts are dull yellow or yellowish brown or both the colour in equal proportion; ventrum is almost of the same coloration but with a deep tinge of yellow colour. Throughout; 3-6 large blood red spots on lateral aspects of neck and anterior part of body and one on each side of the tail near the vent.

*Distribution* : India : Tamil Nadu (Anaimalai and Nilgiri Hills, 4000-5000 feet).

*Status* : Not endangered, but not in abundance.

#### TRAVANCORE UROPELTIS

##### 43. *Uropeltis rubrolineatus* (Gunther 1875)

1875. *Silybura rubrolineatus* Gunther, *P.Z.S.*, : 228 (Travancore Hills; London).

1943. *Uropeltis rubrolineatus*, Smith, *Fauna Brit. Ind.*, 3 : 82.

The snake is moderately large, total length reaches up to 400 mm, diameter of body 12 mm; snout is obtusely pointed; visible part of the rostral is slightly longer than its distance from the frontal; diameter of eye is slightly less than half the length of the ocular shield; body scales in 17 rows; ventrals, 165-172, about  $1\frac{2}{3}$  times as broad as the adjoining scales of body; caudals, 6-8; tail is like the previous species;

Dorsum is blackish-brown, with a bright red stripe (which fades to yellow in alcohol) along each lateral aspect of body and tail (1-3 scale width); ventrum is light brown, with darker irregular spots at places.

*Distribution* : India : Kerala, Western Ghats south of the Palghat Gap; Tamil Nadu (Anaimalai and hills near Trivandrum).

*Status* : A rare snake.

#### BOMBAY HILLS UROPELTIS

##### 44. *Uropeltis phipsoni* (Mason 1888)

1864. *Silybura ellioti* (in part) Gunther, *Rept. Brit. Ind.*, : 190; Beddome, *Ann. Mag. Nat. Hist.* (5)17, 1886 : 20.

1888. *Silybura phipsonii* Mason, *Ann. Mag. Nat. Hist.*, (6)i : 184 (Bombay Ghats; London).

1943. *Uropeltis phipsoni*, Smith, *Fauna Brit. Ind.*, 3 : 82.

A small *Uropeltis*, maximum length 280 mm, diameter of body 9 mm. Its snout is obtusely pointed; visible portion of rostral is longer than its distance from the frontal shield; diameter of its eye is half the length of the ocular shield; scales in 17 rows; ventrals, 138-157, about 1.5 times as broad as the adjacent scales; caudals, 7-12; tail is just like the previous species. Dorsum is brown, purple-brown may or may not be having yellow mottlings or dots; a prominent yellow stripe on lateral aspects of neck and fore part of the body; lateral aspects of tail with yellow stripes which meet with a transverse bar across the anal region.

*Distribution* : India : Western Ghats from the Bombay Hills to the Anaimalai Hills (Tamil Nadu).

*Status* : Available but not in abundance.

#### MYHENDRA MOUNTAIN UROPELTIS

##### 45. *Uropeltis myhendrae* (Beddome 1886)

1886. *Silybura nilgherriensis* var. *myhendrae* Beddome, *Ann. Mag. Nat. Hist.* (5)17 : 15.

1943. *Uropeltis myhendrae*, Smith, *Fauna Brit. Ind.* 3 : 83.

It is comparatively a larger species with a total length of about 540 mm and diameter of body is 17 mm. In morphology and scacle characters, it is quite similar to *hipsoni* but differs in size, diameter and colouration; ventrals are 139-156; caudals, 6-8. Dorsal colour is purplish-brown, each scale bears a yellowish posterior border forming more or less distinct transverse cross-bars, particularly on the anterior part of the body; ventral parts are yellowish, thickly spotted or barred with brown or black; in certain individuals the complete body may be with darker annulations (of same colour as on back).

*Distribution* : India : Western Ghats south of the Goa gap; Tamil Nadu (Nilgiri Hills); Kerala (Travancore Hills, 2000-4000 feet).

*Status* : Undetermined.

#### SIRUMALLAY'S UROPELTIS

##### 46. *Uropeltis broughami* (Beddome 1878)

1878. *Silybura broughami* Beddome, *P.Z.S.*, : 800 (Sirumallays, Madura Dist.; London).

1943. *Uropeltis broughami*, Smith, *Fauna Brit. Ind.*, 3 : 83.

Its maximum length is 410 mm, diameter of body is about 11 mm; rostral is much extended anteriorly thus making the snout acutely pointed; rostral is ridged above and it is produced on the posterior side also; visible part of the rostral is equal to the distance between it and the hinder end of the frontal, it separates the nasal shields for more than half their length; diameter of the eye is not half the length of the ocular shield; body scales are in 19 rows; ventrals, 195-230 (in one specimen only 181), 1.5 times as broad as the adjacent scales; caudals, 7-10; tail is as in *Uropeltis macrolepis*. Dorsum is brown, with distinct transverse series of small, yellow, black-edged ocelli; lateral aspects of the whole body with large, irregular, yellow spots; ventrum is dark brown.

*Distribution* : India : Tamil Nadu (Palni and Sirumalai Hills, Madura District; Nilgiri Hills).

*Status* : Undetermined.

##### 47. *Uropeltis maculatus* (Beddome 1878)

1878. *Silybura maculata* Beddome, *P.Z.S.*, : 154. (Anamallays; London).

1943. *Uropeltis maculatus*, Smith, *Fauna Brit. Ind.*, 3 : 83.

Its maximum length is about 390 mm and the diameter of body is about 11 mm; its snout is obtusely pointed; the visible part of the rostral is equal to its distance from the frontal or a little longer; nasal shields are in contact with one another; diameter of the eye is almost half the length of ocular shield of little less; body scales are in 17 rows; ventrals, 154-165, about 1.5 times as broad as the adjacent scales; caudals, 8-13; tail is compressed, rounded dorsally and with mild swelling; terminal scales on the dorsal aspect may be smooth or feebly keeled; terminal scute is with minute tubercles on the dorsal aspect, ending in a transverse ridge with two points. Dorsum is dark brown or black; ventrum is completely black, the ventrals and adjacent caudals are with lighter margins; a series of orange or red blotches along the side of the neck and fore part of the body, same colouration prevails along the hinder part of body and tail.

*Distribution* : India : Tamil Nadu (Anaimalai Hills); Kerala (Travancore Hills, 6000-7000 feet).

*Status* : Not certain, but not endangered.

#### 48. *Uropeltis petersi* (Beddome 1878)

1878. *Silybura petersi* Beddome, *P.Z.S.*, : 154. (Anamallays; London).

1943. *Uropeltis petersi*, Smith, *Fauna Brit. Ind.*, 3 : 84.

This is a very small *Uropeltis* whose body length hardly exceeds 190 mm and diameter of body is 6 mm. Its snout is obtusely pointed; visible part of the rostral shield is shorter than its distance from the frontal shield; nasals are in contact with one another; diameter of the eye is generally 1/3 the length of the ocular shield; body scales in 17 rows; ventrals 151-180, about 1.5 times as broad as the adjacent body scales; caudals, 6-11; tail feebly compressed, slightly swollen and somewhat rounded dorsally; terminal tail scales feebly or strongly multicarinate; terminal tail scute ends in to a horizontal ridge. Dorsum is brown with or without yellow dots; Ventrum with small irregular yellow spots; lateral aspects of tail without yellow band.

*Distribution* : India : Tamil Nadu (Anaimalai Hills, 4000-5000 feet).

*Status* : A rare snake.

#### MADURA HILL UROPELTIS

#### 49. *Uropeltis liura* (Gunther 1875)

1875. *Silybura liura* Gunther *P.Z.S.*, : 228 pl. 31, fig. B (Madura Hills; London).

1943. *Uropeltis liura*, Smith, *Fauna Brit. Ind.*, 3 : 84.

The total body length of this snake is not more than 320 mm and the diameter of body is about 9 mm. Its snout is acute and pointed; visible part of the rostral shield is as long as its distance from the frontal shield; nasals are in contact with one another; diameter of the eye is less than 1/2 the length of the ocular shield; body scales in 17 rows; ventrals, 174-188, about 1.5 times as broad as the adjacent body scales; caudals, 8-12; tail feebly compressed and somewhat rounded dorsally; terminal tail scales multicarinate; terminal tail scute ends into a transverse ridge. Dorsum is purple-brown, each dorsal scale with dark edges and with a transverse series of minute yellow black marginal ocelli; lateral aspects and ventrum is with large alternately arranged black and yellow spots, which in few individuals are transformed into distinct cross-bars.

*Distribution* : India : Tamil Nadu (Madura and Tinnevely Hills, 3000-5000 feet).

*Status* : Undetermined.

50. *Uropeltis pulneyensis* (Beddome 1863)

1863. *Plectrurus pulneyensis* Beddome, *P.Z.S.*, : 228, Col. Pl. 25, fig. 2 (Palni Hills; London & Calcutta).

1943. *Uropeltis pulneyensis*, Smith, *Fauna Brit. Ind.*, 3 : 85.

Total length of this snake reaches upto 380 mm and diameter of body is 12 mm. Its snout is acutely pointed; the visible part of the rostral is as long as the distance between it and the middle of the frontal shield which separates the nasal shields completely; diameter of the eye is 1/2 to 1/3 the total length of the ocular shield; body scales in 17 rows; ventrals, 161-180 (in one snake these are 154 only), which are 1.5 times as broad as the adjacent body scales; caudals, 6-13; tail is feebly compressed, somewhat rounded dorsally; terminal tail scales in dorsal aspect are feebly multicarinate; terminal tail scute ends in 2 points. Dorsum is dark-brown, some individuals are speckled with darker colours; generally a yellow stripe is present on the lateral aspects of the anterior portion of body; Ventrums are light brownish or entirely yellow, with large yellow alternating spots or cross-bars.

*Distribution* : India : Tamil Nadu (Palni Hills, Madura District); Kerala (Hilly regions near Trivandrum), it is found at high altitudes, 5000-7000 feet.

*Status* : It is a common snake in thought about its range, it is in abundance at the higher altitudes and in wet weather often encountered on road sides, gardens and under rocks. Its food comprises small arthropods, crustaceans and worms.

## DARK-VIOLET UROPELTIS

51. *Uropeltis grandis* (Beddome 1867)

(Text fig. 46)

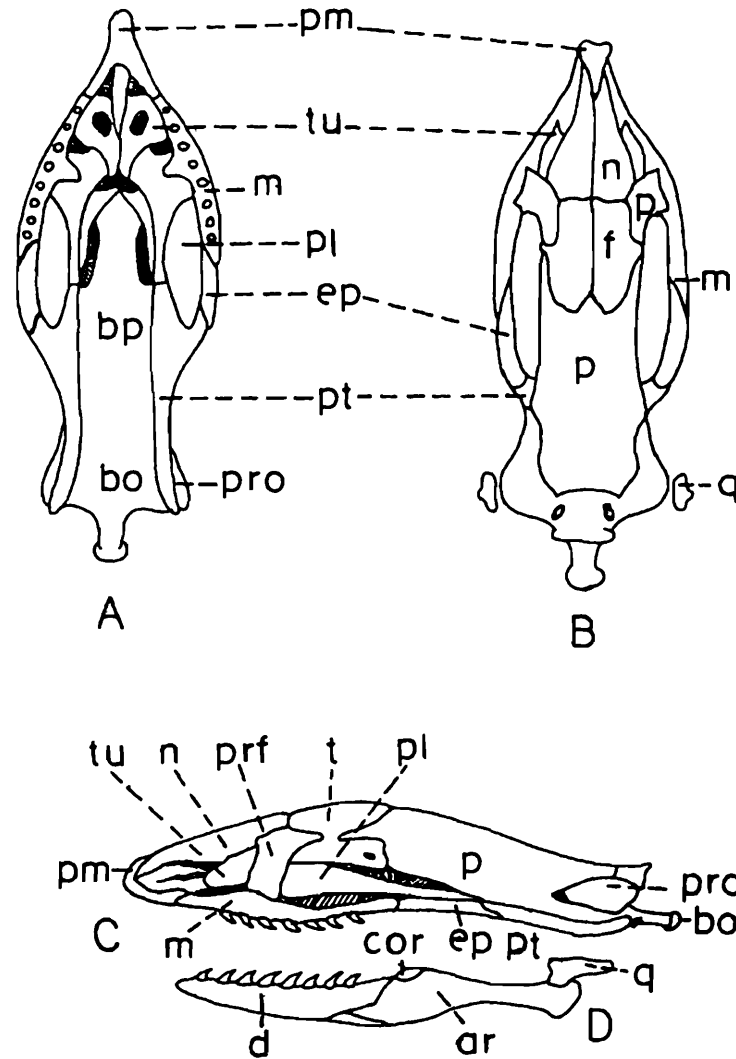
1867. *Rhinophis grandis* Beddome, *Madras Quart. J. Med. Sci.*, 11 : 15 fig., and *J. Soc. Bibl. Nat Hist. i*, 1940 : 316 (Anamallays; London).

1943. *Uropeltis grandes*, Smith, *Fauna Brit. Ind.*, 3 : 85.

It is considerably a large snake whose total length reaches upto 470 mm, and diameter of body about 12 mm. Its snout is moderately pointed; the visible part of the rostral is almost equal to the distance between it and the middle of the frontal, in few snakes this shield separates the nasal shield but in most cases it is not so; diameter of the eye is 1/3 the length of the ocular shield; body scales in 19 rows; ventrals, 198-218; which are 1.5 times as broad as the adjoining body scales; caudals, 6-12; tail is feebly compressed, somewhat rounded on the dorsal aspect; in males caudals and preanal scale multicarinate; terminal tail scute ends in two small but distinct points. Body is of dark-violet colour; Ventrums bears large yellow spots which are transformed into cross-bars in few individuals.

*Distribution* : India : Tamil Nadu (Anaimalli Hills, 4000-4700 feet).

*Status* : Abundantly available.



**Fig. 46.** Skull : *Uropeltis grandis* A. Ventral view., B. Dorsal view., C. Lateral view., D., Mandible. ar., articular; bo., basioccipital; bp. basisphenoid; cor., coronoid; d., dentary; ep., ectopterygoid (or transpalatine); f., frontal; m., maxilla; n., nasal; p., parietal; pl., palatine; pm., premaxilla; prf., prefrontal; pro., prootic; pt., pterygoid; q., quadrate; tu., turbinal.

### 52. *Uropeltis smithi* Gans 1973

1973. *Uropeltis smithi*, Gans,

1990. *Uropeltis smithi*, Murthy, *Rec. Zool. Surv. Occasional Paper*, 114 : 18-19.

The maximum length of this Uropeltid reaches upto 470 mm. Dorsal colouration is dark violet; ventrum is comparatively lighter, with large alternating yellow spots or cross-bars. Snout is acuminate; rostral shield is quite distinct and separates the nasal shields for almost their complete length; body long and slender, body scales in 19 rows; ventrals, 190-218; subcaudals, 6-12; tail is slightly compressed and slightly rounded on dorsal aspect; caudal scute ends in two distinct points.

*Distribution* : Western Ghats : Anaimalais, Topslip, Coimbatore district (Hilly areas).

*Status* : A rare snake, known from few specimens.

### 53. *Uropeltis melanogaster* (Gray 1858)

1858. *Mytilia (Grealia) melanogaster* Gray, *P.Z.S.*, : 264, fig. (Ceylon : London).

1984. *Uropeltis melanogaster*, Mahendra, *Ann. Zool.*, **22** : 78.

The maximum length of this Uropeltid reaches upto 250 mm and the diameter of the body is 8 mm as the total length is about 32 times of its body diameter. The body colouration is dark brown, with yellow spots confluent and form an irregular lateral stripe; in certain individuals the body is spotted with yellow. The juveniles are yellowish above, each scale is with a large brown centre; ventrum is absolutely yellow. Snout is acutely pointed; a part of the rostral is visible from above, it reaches as long as the distance between it and beyond the middle of the frontal shield thus completely separating the nasals; eye is less than half the length of the ocular shield; body scales are in 17 rows; ventrals 141-166, not much broader than the adjacent shields; subcaudal shields 6-10; tail is feebly compressed, rounded above, slightly swollen; terminal tail scales on the dorsal aspect of tail are smooth or feebly keeled; terminal scute is higher than broad, spinose and ends in a horizontal ridge or with two points.

*Distribution* : Sri Lanka (Hilly areas of Central Provinces).

*Status* : A rare snake.

### 54. *Uropeltis phillipsi* (Nicholls 1929)

1929. *Silybura phillipsi* Nicholls, *Ceylon J. Sci. B*, **XV** : 153, and *Ceylon J. Sci. D*, ii, 1929, : 97 (Meniakanda Group, E. Matle Hills, Ceylon; London).

1984. *Uropeltis phillipsi*, Mahendra, *Ann. Zool.*, **22** : 78.

The maximum length of this Uropeltid reaches upto 230 mm and its diameter is 7 mm, as the total length is about 32 times of its body diameter. General colouration is dark bluish-grey, each side of the 7 median dorsal rows are with a yellow centre forming longitudinal lines down the back; a lateral series of yellow blotches or vertical bars. Snout is acutely pointed; portion of the rostral visible above is as long as the distance between it and the hinder end of the frontal, completely separating the nasals; eye one-third the length of the ocular shield; body scales in 17 rows; ventrals 197-210, not much broader than the adjacent scales; subcaudals 6-9; tail is feebly compressed and rounded on the dorsal aspect, may be mildly swollen; terminal dorsal scales of tail are smooth or feebly keeled; terminal scute is higher than broad and with spines all over, it ends in a horizontal ridge or with two points.

*Distribution* : Sri Lanka (Meniakanda Group, E. Matale Hills; Mouskandy Hills Gammadura).

*Status* : A rare snake.

Genus 8. *Rhinophis* Hemprich 1820

1820. *Rhinophis* Hemprich, *Grundr. Naturg* : 119 (type *oxyrhynohus*) in *J. Wagler's Nat. Syst. Amph.*, 1830 : 195.

1943. *Rhinophis*, Smith, *Fauna Brit. Ind.*, 3 : 87.

This genus is characterised by not having temporal shields; mental groove is missing; eyes are distinctly placed in ocular shields; tail is cylindrical, ends in a flat or convex, round or oval, rugose shield; snout is acutely pointed and somewhat compressed; rostral is distinctly large and projects much beyond the mouth, it extends posteriorly and separated the nasal shields completely and prefrontal shields partly.

Key to the species of genus *Rhinophis*

- I. Shielded portion of head is larger than the tail disc; rostral shield separates the nasals; body scales in 17 rows.
  1. Ventral shields, 148-168 ..... *Rhinophis blythi*
  2. Ventral shields, 173-191 ..... *Rhinophis drummondhayi*
- II. Shielded portion of head is equal or smaller than the tail disc; rostral shield separates the nasals.
  1. Shielded portion of head is two times longer than the rostral shield; scales in 15-17 rows.
    - A. Tail disc convex.
      - Scales in 15 rows ..... *Rhinophis sanguineus*
      - Scales in 17 rows.
        - (i) Ventrums (belly) speckled with black and white; sides with large yellow spots; Ventrals 180-204 ..... *Rhinophis homolepis*
        - (ii) Ventrums (belly) is white with large black spots; sides are without spots; Ventrals 180 ..... *Rhinophis fergusonianus*
        - (iii) Uniformly brown all over; Ventrals 153-182 ..... *Rhinophis philippinus*
      - B. Tail disc flat, scales in 17 rows ..... *Rhinophis travancoricus*
    - Scales in 17 rows
      2. Shield portion of head is less than two times longer than the rostral shield; scales in 17-19 rows.
        - (i) Dorsum is with a black vertebral line between two lighter lines; ventrals 236-246 (281) ..... *Rhinophis punctatus*
        - (ii) Whole body is uniformly brown, ventrals 211-227 ..... *Rhinophis oxyrhynchus*
        - (iii) Dorsum is with a broad orange vertebral stripe with large black blotches, ventrals 238 ..... *Rhinophis dorsimaculatus*

### 55. *Rhinophis blythi* Kelaart 1853

1853. *Rhinophis blythi* Kelaart, *Prodr. Faun. Zeyl.*, ii : 14 (Ceylon).

1984. *Rhinophis blythi*, Mahendra, *Ann. Zool.*, 22 : 64.

The maximum length is 370 mm, diameter of body is 12 mm. General colouration is dark brown, each scale below is with a yellow spot or margin; a series of yellow vertical spots on each side of the fore part of the body, usually connected by a lateral stripe which may extend the whole length of the body; a yellow ring is present round the base of the tail. The snout is acutely pointed and compressed; the rostral shield projects well beyond the mouth, and backwards separating the nasal shields and partly the prefrontals; rostral is not ridged on the upper side, not separating the prefrontals for more than half their length, the visible portion is as long as the distance between it and the hinder part of the frontal; frontal shield is as long as or longer than the parietals; eye is less than half the length of the ocular shield; body scales are in 17 rows; ventrals 148-168, a little broader than the adjacent scales; subcaudals 5-9; caudal disc is convex, one half to three-fifth as long as the shielded part of the head, hardly visible from below, covered with minute tubercles or spicules; some of the caudal scales are with faint keels.

*Distribution* : Sri Lanka : Hills of the centrals Uva and Southern Provinces.

*Status* : Quite common.

### 56. *Rhinophis drummondhayi* Wall 1921

1921. *Rhinophis drummondhayi*, Wall, *Sn. Ceylon.* : 43, and *J. Bombay N.H.S.* xxix, 1923 : 356 (Uva Patnas, Ceylon; London).

1984. *Rhinophis drummondhayi*, Mahendra, *Ann. Zool.*, 22 : 65.

The maximum length of this Uropeltid reaches upto 300 mm, diameter of body is about 9 mm. Dorsal colouration is brown, uniform or each ventrum is also bears the same colouration, but the white colour is more extensive; a series of light spots or vertical bars along each side of the body present or absent; a more or less complete ring of light shade is present round the base of the tail. Characters and scalation etc. are quite similar to *R. blythi* except that ventrals are 173-191 and subcaudals, 4-8.

*Distribution* : Sri Lanka : Hills of Central and Uva Provinces.

*Status* : A rare species.

### CHERAMBODY RHINOPHIS

### 57. *Rhinophis sanguineus* Beddome 1863

1863. *Rhinophis sanguineus* Beddome, *P.Z.S.*, : 227 (Cherambody, Malabar; London).

1943. *Rhinophis sanguineus*, Smith, *Fauna Brit. Ind.*, 3 : 89.

This moderately large *Rhinophis* attains a total length about 400 mm and the body diameter is 10 mm. Its rostral shield is devoid of ridges dorsally, not separating the prefrontal shields for half their length, its visible portion is as long as the distance between it and the hinder part of the frontal shield which is as long as the parietal shields; diameter of the eye is  $\frac{1}{3}$  the length of the ocular shield; body scales in 15 rows; ventrals 182-218, about  $1\frac{1}{2}$  times as broad as the adjacent scales; caudals 5-10; tail disc is convex, longer than the shielded part of the head, covered with sharp pointed spike-like structures or finely striated; dorsal caudal scales are smooth; ventral caudals and preanal scale is multicarinate in males. Dorsum is black with a bluish tinge, with or without small light black spots, ventrum (belly) and 3-4 outer rows of body scales are red, densely spotted with black; ventral aspect of tail is red, in many individuals the middle portion is black.

*Distribution* : India : Karnataka (Koppa, Kalsa near Mysore; Kerala (Tinnevely Hills); Tamil Nadu (Nilgiri Hills, Hilly area between Coorg & Nilgiri Hills referred as wynaad).

*Habits and habitats* : Feeds on small arthropods, crustaceans and worms; breeding season is between July to September; it is a viviparous snake.

*Status* : Abundant throughout its range.

#### 58. *Rhinophis homolepis* Hemprich 1820

1820. *Rhinophis homolepis* Hemprich, *Grund Naturg.*, : 119.

1984. *Rhinophis homolepis*, Mahendra, *Ann. Zool.*, **22** : 68.

The maximum length of this snake hardly exceeds 280 mm and the diameter of the body is 8 mm. General colour is blackish-brown, each dorsal scale is with a fine margin of yellow, ventral scales are with a broader margin; a series of triangular yellow spots along each side of the body. The snout is acutely pointed and mildly compressed; the rostral shield projects well beyond the mouth and backwards separating the nasal shields and partly the prefrontals; rostral obtusely ridged on the upper side, not separating the prefrontals for more than half their length, the portion visible as long as the distance between it and the hinder end of the frontal or a little longer; frontal shield is as long as the parietals; eye is  $\frac{1}{3}$  to  $\frac{1}{4}$  the length of the ocular shield; body scales are in 17 rows; ventrals 180-204, a little broader than the adjacent scales; subcaudals 3-5; caudal disc is convex, as long as or longer than the shielded part of the head, well visible from below, covered with spicules arranged in longitudinal series.

*Distribution* : Sri Lanka : Hills of Central and Uva and Sabaragamuwa Provinces.

*Status* : Available but not so common.

## CARDAMON HILL RHINOPHIS

59. *Rhinophis fergusonianus* Boulenger 1826

1896. *Rhinophis fergusonianus* Boulenger, *J. Bombay N.H.S.*, **10** : 236 (Cardamon Hills, Travancore; London).

1943. *Rhinophis fergusonianus*, Smith, *Fauna Brit. Ind.*, **3** : 90.

This slender snake is about 320 mm in total length with a diameter of body about 7 mm. Its rostral shield is obtusely ridged dorsally, not separating the prefrontal for more than half their length; the visible part of the rostral is as long as or a little longer than the distance between it and the hinder end of the frontal which is as long as the parietals; diameter of the eye 1/3 to 1/4 the length of the ocular shield; body scales in 17 rows, ventrals 180, slightly broader than the adjacent body scales; caudals 3-5; tail disc is convex, longer than the shielded part of the head, scarcely visible from below and covered with fine striations. Dorsum is black, with fine white dots all over; lateral aspects white with black spots or dots; ventrum is also white with large black spots which meet with each other and form a zig-zag pattern; tail disc is black with a complete yellow margin.

*Distribution* : India : Kerala (Cardimom Hills near Trivandrum).

*Status* : Insufficiently known. The species is based on a single specimen.

60. *Rhinophis philippinus* Cuvier 1829

1829. *Rhinophis philippinus* Cuvier, *Regne. Anim* 2nd ed. ii : 74 ("Philippines").

1943. *Rhinophis philippinus*, Smith, *Fauna Brit. Ind. Rept.*, **3** : 91.

The maximum length of this Uropeltid reaches upto 280 mm, diameter of body is 9 mm. General body colour is uniformly brown, each lateral aspect is with a lighter margin, in few individuals there is a yellowish blotch near the head or on the anal region. General scalations etc. are like *R. homolepis* but differs in, ventrals 153-182; subcaudals 3-6.

*Distribution* : Sri Lanka : Hills in the Central and Sabaragamuwa Provinces.

*Status* : Available, but not in abundance.

## TRAVANCORE RHINOPHIS

61. *Rhinophis travancoricus* Boulenger 1892

1892. *Rhinophis travancoricus* Boulenger, *J. Bombay N.H.S.*, **7** : 318, pl., and *Cat. Sn. Brit. Mus. i*, 1893 : 143 (Travancore; London).

1943. *Rhinophis travancoricus*, Smith, *Fauna Brit. Ind.*, **3** : 91.

This snake is the smallest member of this genus, total body length is 180 mm and the diameter of body is 7 mm. Its rostral shield is not ridged on dorsal aspect, it

separates the prefrontal shields for half their length, or a little more or less, its visible portion is as long as the distance between it and the hinder part of the frontal; frontal shield is as long as the parietals; diameter of the eye  $\frac{1}{3}$  the length of the ocular shield; body scales are in 17 rows; ventrals 132-146, about 1.5 times as broad as the adjacent scales; caudals 5-7; tail disc is as long as the shielded portion of the head and is almost flat, it is covered with sharp pointed spike-like structures. Dorsum is deep purple-brown, the scales on the lateral aspects and belly are edged with white colour; throat and the fore part of the belly is almost completely white; anal region is black; ventral surface of tail is yellow.

*Distribution* : India : Kerala (Trivandrum, Pirmed, Ernakulam), Found at sea level and in the hills, 4000 feet.

*Status* : Available in sufficient numbers.

### 62. *Rhinophis punctatus* Muller 1832

1832. *Rhinophis punctatus* Muller, *Zeitschr. Physiol.* **iv** : 248 (Ceylon).

1948. *Rhinophis punctatus*, Mahendra, *Ann. Zool.*, **22** : 66.

The total length of this snake reaches upto 380 mm or more and the diameter of body is 8 mm. Snout is orange, general body colouration is yellowish or brownish, head is brown, each scale is with a large central black spot, except the two series on either side of the vertebral line; lateral aspects of body and lower surface of tail yellow, except for a median black stripe; the eight row above the ventrals is yellow; caudal shield is dull orange with a subterminal dark band. Rostral shield is strongly ridged dorsally, more than half the length of the shielded part of the head, separating the prefrontals for more than half their length; frontals shorter than the parietals; eye  $\frac{1}{3}$  to  $\frac{1}{5}$  the length of the ocular shield; body scales in 17 rows; ventrals, 236-246; subcaudals, 7-9; caudal disc is convex, as long as the shielded part of the head, covered with minute spines or tubercles.

It is subject to the confirmation by the availability of more material that whether *Rhinophis porrectus* Wall (1921, Sn. Ceylon, pp. 92), which has got 281 ventrals, but not showing any difference in other character is really a distinct species from *R. punctatus* (as at present only few specimens of this species are available).

*Distribution* : Sri Lanka : Hills in the Central and Provinces (Kandy, Peradeniya); N.W. Province (maradanka dawala between Chilaw and Puttalam).

*Status* : Quit rare, known from few specimens.

### 63. *Rhinophis oxyrhynchus* (Schneider 1801) (Text fig. 47)

1801. *Typhlops oxyrhynchus* Schneider, *Hist. Amph.* **ii** : 341 (Ceylon).

1984. *Rhinophis oxyrhynchus*, Mahendra, *Ann. Zool.*, **22** : 66.

This Uropeltides moderately large and its maximum length reaches upto 400 mm. and the body diameter is 10 mm. General body colour is uniformly brown, each scale is with a lighter margin; anal region is yellow and in certain individuals there is a yellow spot below the tail. Body is comparatively stout; snout is acutely pointed and compressed; the rostral shield projects much beyond the mouth, and backwards separating the nasal shields and partly the prefrontals; rostral is strongly ridged on the dorsal aspect, separates the prefrontals for more than half their length, the portion visible more than half the length of the shielded part of the head; frontal is as long as the parietals; eye  $\frac{1}{3}$  to  $\frac{1}{4}$  the length of the ocular shield; body scales in 17 or 19 rows; ventrals 211-227, not much broader than the adjacent scales; subcaudals, 5-7; tail is like that of *R. punctatus*.

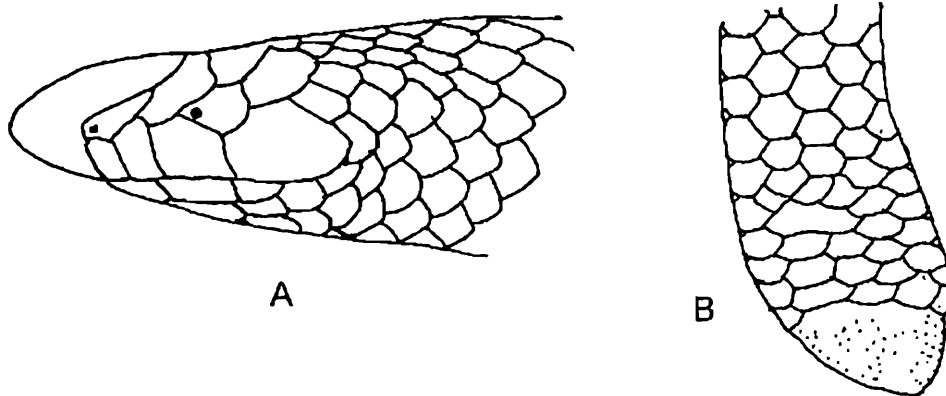


Fig. 47. *Rhinophis oxyrhynchus* A. Side view of head B. Side view of tail.

*Distribution* : Sri Lanka : The low country in the Northern Province, Mullaitivu; Vavuniya.

*Status* : Available but not so common.

#### 64. *Rhinophis dorsimaculatus* Deraniyagala 1941

1941. *Rhinophis dorsimaculatus* Deraniyagala, *J. Bombay Nat. Hist. Soc.*, **42** : 800-802, figs.

1984. *Rhinophis dorsimaculatus*, Mahendra, *Ann. Zool.*, **22** : 65.

The maximum length of this Uropeltid reaches upto 350 mm with a body diameter of 8 mm. The snake is slender and comes quite near to *R. punctatus*. Dorsum is with a broad orange vertebral stripe which occupies 5 or 6 rows, the three median one with black centres for about five head lengths, after which it breaks up into a series of about 40 black blotches, each larger than the head; remaining body scales are black with yellow margins except scale-rows 6 or 7, which are uniformly yellow. Head and caudal shield brown suffused with orange, the snout is acutely pointed and compressed; the rostral shield projects well beyond the mouth, and backwards separating the nasal shields completely and partly the prefrontals; rostral is strongly ridged on the

upper side, separating the prefrontals for more than half their length, the portion visible above is half the length of the shielded part of the head; frontal shield is subtriangular, much shorter than the parietals; eye is one-fourth the length of the ocular-shield; body scales are in 17 rows, ventrals 238, slightly broader than the adjacent shield; subcaudals are 6; caudal disc is convex, about three-quarters the length of the shielded part of the head, covered with numerous small tubercles.

*Distribution* : Sri Lanka : Marichehukate, N.W. Province.

*Habits and habitat* : Locality in which specimens were found is usually dry and arid.

*Status* : Very rare, known from two type specimens only.

#### Genus 9. *Pseudotyphlops* Schiegel 1839

1839. *Pseudotyphlops* Schiegel (in part), *Abbild. Amphib.*, : 40 (type by elimination *philippinus*).

1984. *Pseudotyphlops*, Mahendra, *Ann. Zool.*, **22** : 59.

This monotypic genus is characterised by having eye in the ocular shield; devoid of temporal shield; devoid of mental groove; tail is cylindrical, swollen at the end, obliquely truncate above, with large, subcircular, spinose shield; body scales are in 19 rows.

#### 65. *Pseudotyphlops philippinus* Cuvier 1829

1829. *Uropeltis philippinus* Cuvier, *Reg. Anim.* 2nd ed., ii : 76 (Philippines : Paris).

1984. *Pseudotyphlops philippinus*, Mahendra, *Ann. Zool.*, **22** : 59.

The maximum recorded length is 508 mm; tail 15 mm; diameter of the body is about 22 mm (Deraniyagala 1955, p. 13, from Namunukula). This is the largest species of the family. Dorsum is dark-brown or blackish, many individuals are brown iridescent with purplish and brown reflections and darker spots; head is with yellow patches, in juveniles similar patches occur on the ventrum, one specimen from Virakatiya (Southern Province) is olive brown dorsally, more greenish on head, lighter ventrally with dark blotches on the belly; a light line forms the border of each longitudinal row of scales on dorsal aspect; the ventral aspect of tail is yellow; the caudal plate is brownish; each scale has a dark brown centre. The complete body of the snake bears a bluish tinge. Snout is acutely pointed; rostral shield is convex, obtusely ridged on dorsal aspect, separates the nasals for half or more than half their length; nasals form a suture behind the rostral; eye is about 1/3 the length of the ocular shield; body scales are in 19 rows; ventral, 129-149 slightly broader than adjacent scales; subcaudals, 4-9; tail obliquely truncate above, the truncated portion is expanded and carrying a flat, subcircular shield, as long as or longer than the shielded part of the head, covered with coarse spines.

*Distribution* : Sri Lanka : (Found at low elevations at Trincomalee, Matara, Kolonne, Korle, Badulla, Virakatiya).

*Habits and habitat* : In habits coastal plains upto 3000 feet.

*Status* : A common snake in its range.

#### Family IV. ANILIDAE (Boulenger 1890)

1890. *Jlysiidae* Boulenger, *F.B.I.*, p. 249, and *Cat. Sn. Brit. Mus.* i, 1893 : 131.

1984. *Anilidae*, Mahendra, *Ann. Zool.*, 22 : 90.

The body elements of skull form intimate articulation; prefrontal is in contact with the nasal; supratemporal intercalated in the cranial wall; quadrate is quite small (short), vertically placed; dentary is firmly attached to the articular; a coronoid bone is available; premaxillary teeth may be present or absent; vestiges of pelvis and hind limbs, terminate in a claw-shaped spur on each side of the vent; hypapophyses are absent throughout the vertebral column. This family comprises 3 genera, 2 are available in oriental region, the third, *Anilius* inhabits the tropical S. America one genus *Cylindrophis* covers the scope of this worth.

#### Genus 10. *Cylindrophis* Wagler 1828

##### PIPE SNAKES

1828. *Cylindrophis* Wagler, *Icon. Amphib.*, p. 5, and *Syst. Amphib.* 1830 : 195 (type *resplendens*).

1984. *Cylindrophis*, Mahendra, *Ann. Zool.*, 22 : 91.

Nine to twelve robust, subequal teeth are present on each maxilla; premaxilla is devoid of teeth. Head is small, not distinct from the neck, with large symmetrical shields; eye small, with rounded or vertically subelliptic pupil; nostril is in nasal shield which is in contact with its fellow behind the rostral; no loreal or preocular; a mental groove is present. Body is stout, cylindrical, of almost equal diameter throughout; scales are smooth, in 19-23 rows; ventrals are feebly enlarged; tail is quite short. Hemipenis (in *C. rufus*) is short and thick, furnished with a series of long convoluted folds through which the undivided sulcus winds when seen in the organ at rest; the complete organ is devoid of spines. The range of the genus covers Sri Lanka; the Indo-chinese region and the East Indies. Seven species are known; two species covers the scope of this work.

#### THE RED-TAILED PIPE SNAKE

##### 66. *Cylindrophis rufus* (Laurenti 1768)

(Text figs. 49 & 50)

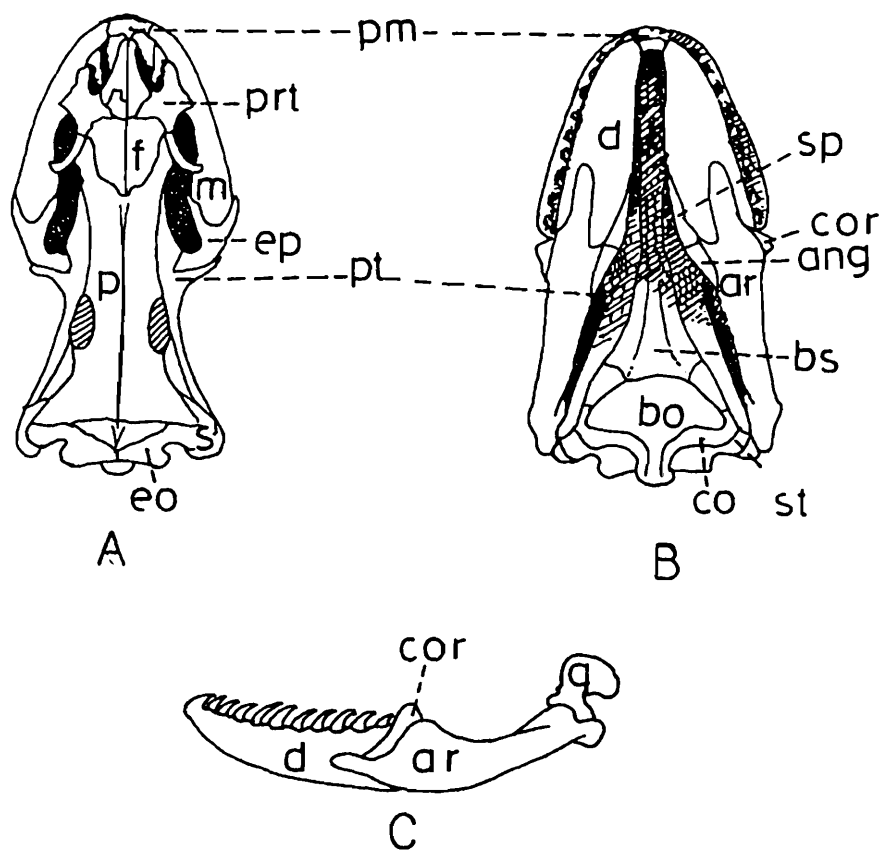
1768. *Anguis ruffa* Laurenti, *Syn. Rept.*, : 71 ("Surinam").

1943. *Cylindrophis rufus*, Smith, *Fauna Brit. Ind. Rept.*, 3 : 96.

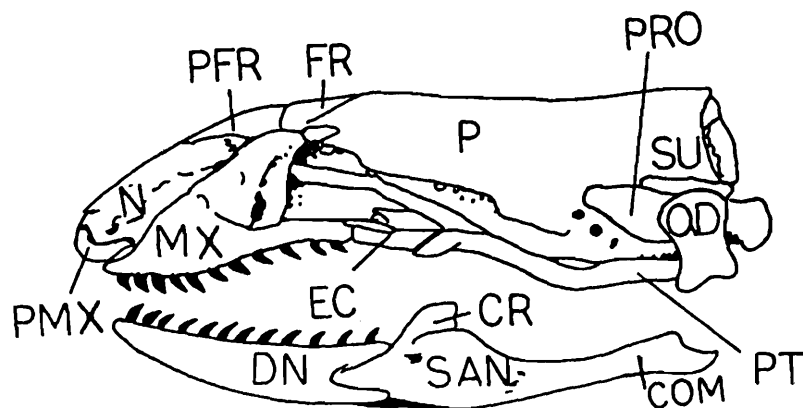
Two races or subspecies of this species are recognised. The first one *Cylindrophis rufus rufus* is from Thailand, Laos, Cambodia, Vietnam S. of lat. 17°N. The second subspecies covers the scope of this work has been described by Smith 1943 from Myanmar.

***Cylindrophis rufus braminus* Smith 1943**

1943. *Cylindrophis rufus braminus*, Smith, *Fauna Brit. Ind. Rept.*, 3 : 97.



**Fig. 49.** Skull : *Cylindrophis rufus* A. Dorsal view, the quadrate and mandible have been removed. B. Ventral view. C. Left mandible, outer view.



**Fig. 50.** Skull : *Cylindrophis rufus* (Red-tailed Pipe snake)

The maximum length of this small snake reaches upto 330 mm, tail 10 mm. Dorsum is dark brown or black, highly iridescent, with or without narrow light cross-bars, usually alternating with one another and extending only to the middle of the back; belly heavily marked with dark brown and less evident cross-bars are present; in some snakes the belly is entirely dark brown. The head is quite depressed, with a broadly rounded snout; rostral about as broad as high; breadth of the frontal is equal to or slightly more than half the distance between the centres of the eyes (less than half in two specimens from Myanmar); supraocular and frontal shields are equal; parietals are smaller than the supraoculars; supralabials are 6, third and fourth are largest and touch the eye; three infralabials remain in contact with the anterior genials; posterior genials are small, may be absent in some individuals; ventrals scarcely broader than the adjacent scales; anal is divided.

*Distribution* : Myanmar (Tenasserim as far North as Myitkyina).

*Habits and habitat* : Inhabits rice fields, gardens and human dwellings; it burrows in soft sand; takes readily to water. Its food comprises of snakes and eels. Snake is gentle in disposition.

*Status* : Very common.

67. *Cylindrophis maculatus* (Linnaeus 1754)  
(Text fig. 48)

1754. *Anguis maculata* Linnaeus, *Mus. Ad. Frid.*, : 21, pl. xxi, fig. 3(America).

1984. *Cylindrophis maculatus*, Mahendra, *Ann. Zool.*, **22** : 98.

The maximum length of this snake hardly exceeds 600 mm, tail 18 mm. Dorsum is with a black network enclosing two series of large reddish-brown spots; ventrum is white, variegated with black or barred with black and white. Other characters are like *C. rufus* except that eye is comparatively smaller than *rufus*; frontal narrower, its breadth is less than half the distance between the centres of the eye, usually smaller than the supraoculars; rostral broader; body scales are in 19 or 21 rows; ventrals, 185-212; subcaudals, 4-6.

*Distribution* : Sri Lanka : Whole of country.

*Habit and habitat* : Inhabits the plains, foot-hills and hills of low altitude, viviparous, 2 or 3 young are produced at a time, they are usually large, measuring from 127-137 mm. in length when born. It is a most docile and placid snake, never makes an attempt to bite. It lives beneath the soil.

*Status* : Very common.

Family V. XENOPELTIDAE Cope 1864

1864. *Xenopeltidae* Cope, *Proc. Acad. Philad.*, : 230; Boulenger, *F.B.I.* 1890 : 276, and *Cat. Sn. Brit. Mus. i.*, 1893 : 167.

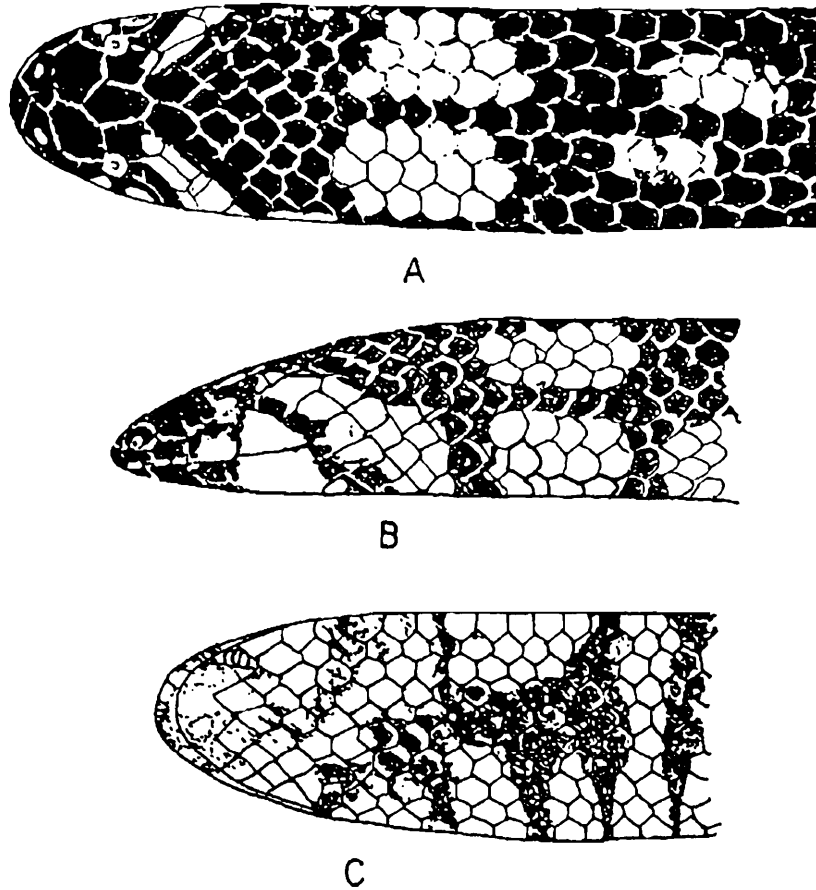


Fig. 48. *Cylindrophis maculatus* Head : A. Dorsal pattern B. Lateral pattern C. Ventral pattern.

1943. *Xenopeltidae*, Smith, *Fauna Brit. Ind.*, 3 : 98.

This interesting family includes the burrowing primitive snakes with a cylindrical body with small head, which is not differentiated from the neck; tail is quite short; eyes are small but distinct; dorsal body scales are quite small and ventral shields are transversely enlarged; occipital shield is present; teeth are small, uniform and are present on premaxillae, maxillae, palatine and dentary bones; auditory bones are entirely different from other snakes, the fenestra ovalis and foot plate which fits into it, are generally large and with a short but massive columella auris, it is united with the quadrate through an additional rod-shaped bone of the same size, which is wedged between them; ectopterogoid bone is available and connects the pterogoid with the maxilla; pterygoid bone reach upto the quadrate and the palatine; maxilla bone is fixed and suturally articulated with the premaxilla; prefrontal bone is quite large; post frontal bone is not present; nasal bones form an intimate contact; the supratemporal bone occupies the place in the roof of the cranium and projects in a backward direction; quadrate bone is short and vertically placed; in mandible the dentary bone is movable on an elongated surangular bone; pelvic girdle's vestiges are not present; hypapophysis are absent in the posterior part of the vertebral column. Family includes only one genus and one species.

Genus 11. *Xenopeltis* Reinwardt 1827

1827. *Xenopeltis* Reinwardt in Boie, *Isis*, : 564 (type *unicolour*).

1943. *Xenopeltis*, Smith, *Fauna Brit. Ind.*, 3 : 100.

Body is cylindrical; head not distinct from neck, with large shield on dorsal aspect; the most interesting character is the presence of a occipital shield which is in contact with the frontal and preocular shields (distinctly large); loreal shield is not available; a mental groove is present; teeth are small, equal in size, closely set and are strongly curved with outwardly directed edged crowns; 4-5 teeth on each side of the premaxilla and 35-45 on each maxilla; eyes are small, with vertically elliptic pupil; body scales are in 15 rows; ventral shields are well developed, tail is quite short in comparison to the body; subcaudal shield are paired. Genus includes only one species.

## SUNBEEM SNAKE

68. *Xenopeltis unicolor* Reinwardt 1827

(Text figs. 51 & 52)

1827. *Xenopeltis unicolor* Reinwardt in Boie, *Isis.*, : 564 (Java).

1943. *Xenopeltis unicolor*, Smith, *Fauna Brit. Ind.*, 3 : 101.

Sunbeem snake reaches to a maximum standard length of 1050 mm and 95 mm tail in females and males are comparatively smaller with a standard length of 850 mm. and tail about 70 mm. It is with a much depressed head, not at all distinct from neck, snout is rounded; nostril between two small nasal shields; rostral is broad and elevated and distinctly visible from above; internasals much smaller than the prefrontal shields; frontal is a large shield; supraocular shields are quite small, somewhat triangular; interparietal shield is almost equal to the parietal shields, may be little longer in few individuals; in most of the snakes there is a pair of enlarged shields almost behind the interparietal shield; a large ocular shield is present which extends upto the upper surface of the head; two large postocular shields are present, which look exactly like the temporal shields in shape; supralabials are 8, first is contact with the internasal in front of the nasal, fourth and fifth supralabials touch the eye; a pair of genials is quite distinct and form contact with the first 3 infralabials. Body scales are extremely smooth, shining and highly polished, in 15 rows throughout, ventrals 173-196; caudals 24-31. Hemipenis is forked near the tip; sulcus bifurcated about half way down; hemipenis in most cases is with a longitudinal furrow in its whole length, with 4 or 5 transverse flounces; the distal half of hemipenis bears some calyculate zones; the organ is devoid of spines. General colour is black or chocolate-brown. The ventrum is whitish, with brown mottling. In sunlight its body flashes different colours like blue, emerald green, deep red and copper brown etc. This is why it is called as Sunbeem Snake.

*Distribution* : India : Andaman Islands.

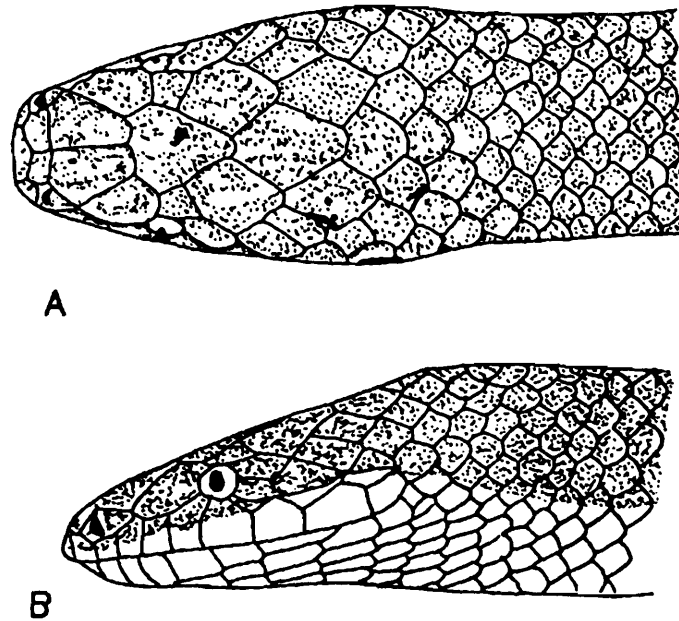


Fig. 51. *Xenopeltis unicolor* Reinwardt. Head : A Dorsal pattern, B. Lateral pattern.

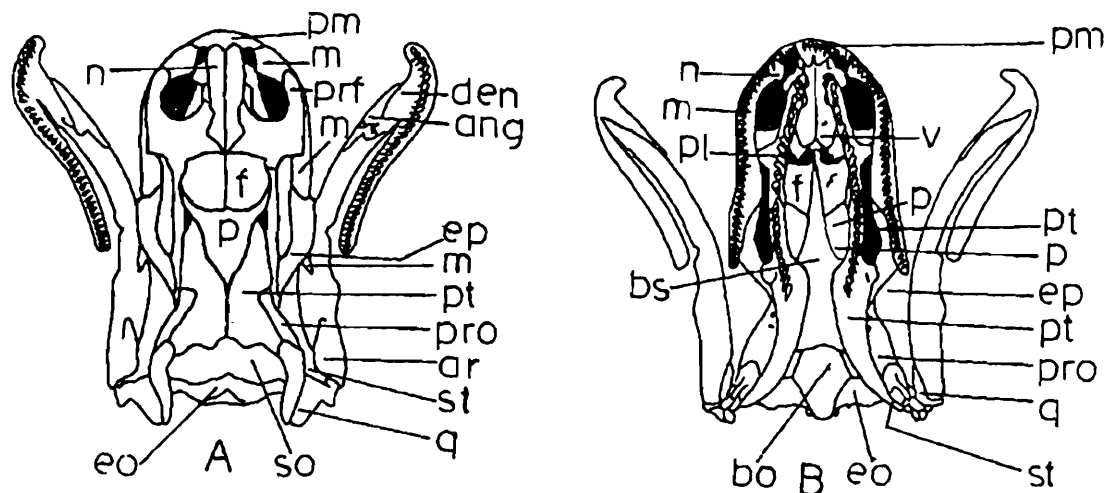


Fig. 52. Skull : *Xenopeltis unicolor* A. Dorsal view., B. Ventral view. ang., angular; ar., articular; bo., basioccipital; bp. basisphenoid; ca., columella auris; d., dentary; eo., exoccipital; ep., ectopterygoid (or transpalatine); f., frontal; fp., foot-plate.

*Elsewhere* : Burma (Upto Myit-Kgina in north), Thailand; South Vietnam, Malaysia proper and Archipelago and North China (Kwangtung Province).

*Habits and habitats* : This is a most secretive, nocturnal species inhabiting, soft soil, burrowing in muddy earth beneath the wooden logs, stones, rice fields and gardens. It is in offensive and hardly makes an attempt to bite. On rough handling it vibrates its tail violently and passes excreta. Its food comprises small vertebrates like frogs, lizards, small snakes, rodents and birds. This snake is without any breeding record so far.

*Status* : It is a rare snake; insufficiently known.

Family VI. BIODAE Gray 1842  
(Text fig. 53)

1864. *Biodae* Gray, *Zool. Misc.*, : 41.

1943. *Biodae*, Smith, *Fauna Brit. Ind.*, 3 : 102.

This family comprises the largest living snakes—the Pythons and Boas, some of them reach to a length of about 10 meters or even more. Fossil records prove that the ancestral forms were still larger, some of them like *Gigantophis* of Eocene of Egypt reached to a length of 30 meters. The body of these snakes is covered with small, smooth scales; ventrals are in the form of large transversely enlarged plates, generally forming a single row, but in certain individuals two rows are available in the tail region; the head is broad and quite distinct from the neck; tail is short and partly

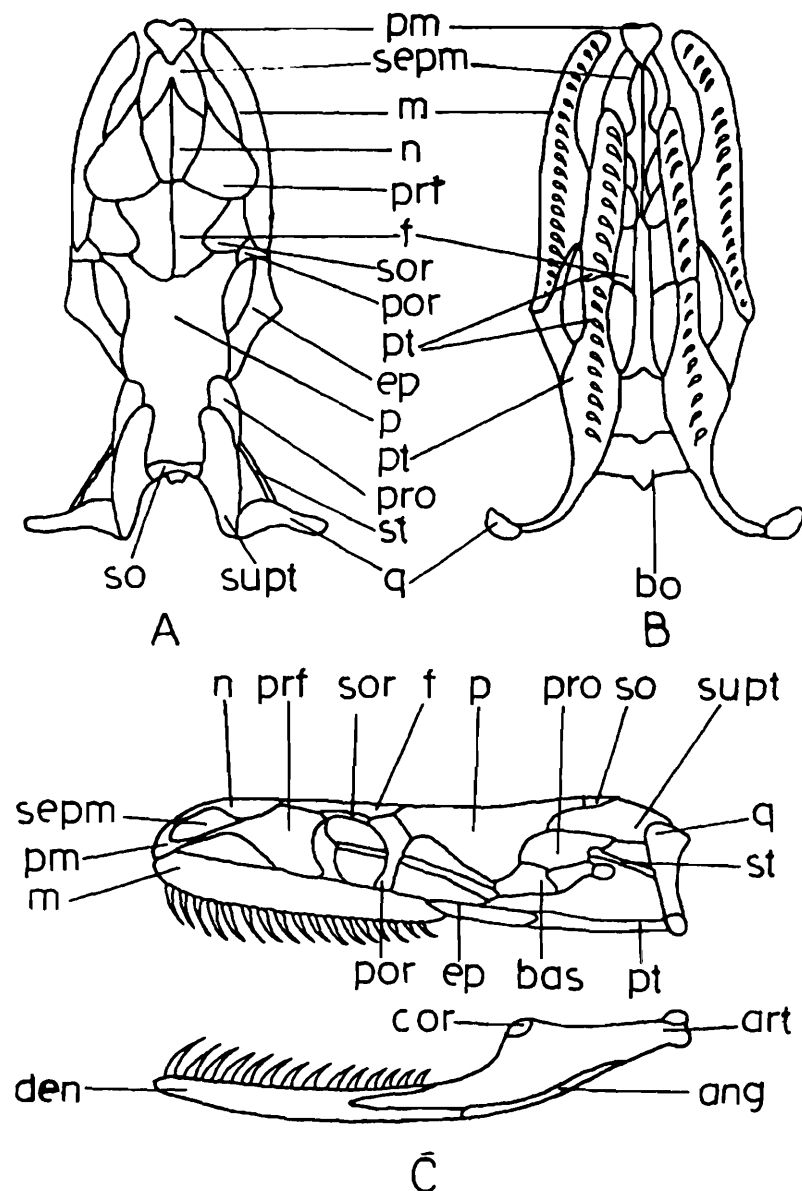


Fig. 53. Skull : *Python molurus* A. Dorsal view, B. Ventral view, C. Lateral view.

prehensile; eyes are larger in Pythons but comparatively smaller in the burrowing forms; mouth in quite large and both the jaws are most flexible; teeth are large, uniform, pointed are recurved and are present on the dentary, premaxilla, maxilla, pterygoid and palatine in Pythons but in Boas the teeth are not available on premaxillae. Mandibles are with a distinct coronoid bone; ectopterygoid bone is distinct and connects the pterygoid bone reaches the quadrate and the palatine; anterior cranial elements are most flexible and movable, premaxilla and maxilla are not united and prefrontal is not having a sutural articulation with the nasal bone; supratemporal bone is elongated and horizontally backward from the cranium; quadrate is vertically situated and articulates with the supratemporal; dentary is firmly attached to the articular; vestiges of pelvis and hind limbs are present, terminating in a claw-shaped spur, visible on either side of the cloaca and are longer in the male in comparison to the female. All the members are oviparous and guard their eggs by coiling themselves around them during the incubation period. These snakes are most powerful and kill their prey by constriction, which comprises birds, mammals and other vertebrates. They are mainly the residents of tropics and subtropics, some live in dense forests, deserts, marshes and semiaquatic habitats. Throughout the world the family is represented by more than 90 species distributed in 22 genera.

### Key to the Genera of Family BOIDAE

- I. Supraorbital bone is present; teeth are present on the premaxilla; head is with large symmetrical shields and labial scales are pitted ..... *Python*
- II. Supraorbital bone is not present; teeth are not present on the premaxilla; head is covered with small scale like shields and labial scales are not pitted .....  
..... *Eryx*

#### Genus 12. *Python* Daudin 1803

1803. *Python* Daudin, *Mag. Encycl. An.*, 8 : 434 (type *molurus*).

1943. *Python*, Smith, *Fauna Brit. Ind.*, 3 : 105.

This genus includes large snakes in which head quite distinct from neck, with large and symmetrical shields; ventral shields do not cover the whole width of the belly and are narrow; eyes are large, pupil vertically elliptical; dorsal body scales are smooth, in 60-75 rows; rostral, anterior supralabials and infralabials are pitted, subcaudal shields divided; anterior maxillary and mandibular teeth are quite long; hemipenis is forked for about half the length, the lips of the sulcus are quite prominent; throughout the whole length of the hemipenis longitudinal folds are available and just proximal to the bifurcation of the sulcus there is a fleshy, tongue-shaped papilla; the hemipenis is devoid of spines. The genus comprises seven species distributed in Africa, southeast Asia, islands of Indonesia and the Philippine islands.

### Key to the species of genus *Python*

- I. Two supralabials and rostral shield pitted, Ventrals 245-270; Caudals 58-73 ...  
 ..... *Python molurus*
- II. Four supralabials and rostral shield pitted, Ventrals 297-332; Caudals 75-102  
 ..... *Python reticulatus*

#### INDIAN PYTHON, ROCK PYTHON

##### 69. *Python molurus* (Linnaeus 1758)

(Text figs. 54, 55 & 56)

1758. *Coluber molurus* Linnaeus, *Syst. Nat.*, 10 : 225.

1943. *Python molurus*, Smith, *Fauna Brit. Ind.*, 3 : 106.

The Indian Rock Python or Azgar is an impressively large and heftiest snake and is the second largest of the Indian snakes. Its length ranges from 2.5 to 6 m; the maximum recorded length is 7 m and weight 85 kg. The head is quite distinct from the neck and has symmetrical shields; the rostral, the anterior supralabials and the anterior and posterior infralabials are pitted. These sensory pits on the rostral and first two labials constitute one of the main characters differentiating this Python from other Indian snakes. The other taxonomic characters are: costals are smooth and arranged in 60-75 rows; ventrals 245-270; caudals in 60-72 pairs. Eyes are small and with vertical pupils, iris flecked with gold; nostrils are large, directed upwards and situated high on the snout; chin is with a mental groove. Tail is short and prehensile, tapering to a point; vestiges of pelvis and hind limbs terminate in a claw like spur on either side of anus, which are more prominent in males than the females. The colour of the body varies from pale grey to yellow above, and is yellow below; the flanks are paler. A dorsal series of large walnut-coloured crown saddles alternate with pinkish laterals.

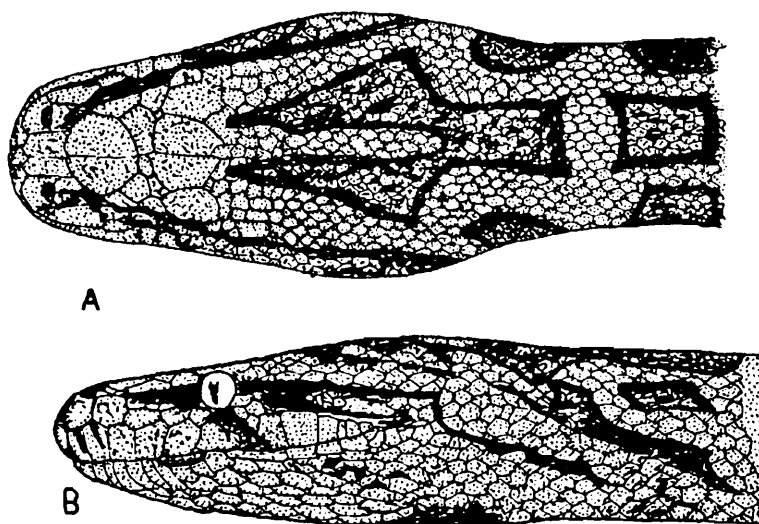


Fig. 54. *Python molurus* (Linnaeus) A. Dorsal pattern of head and neck B. Lateral pattern of head and neck.

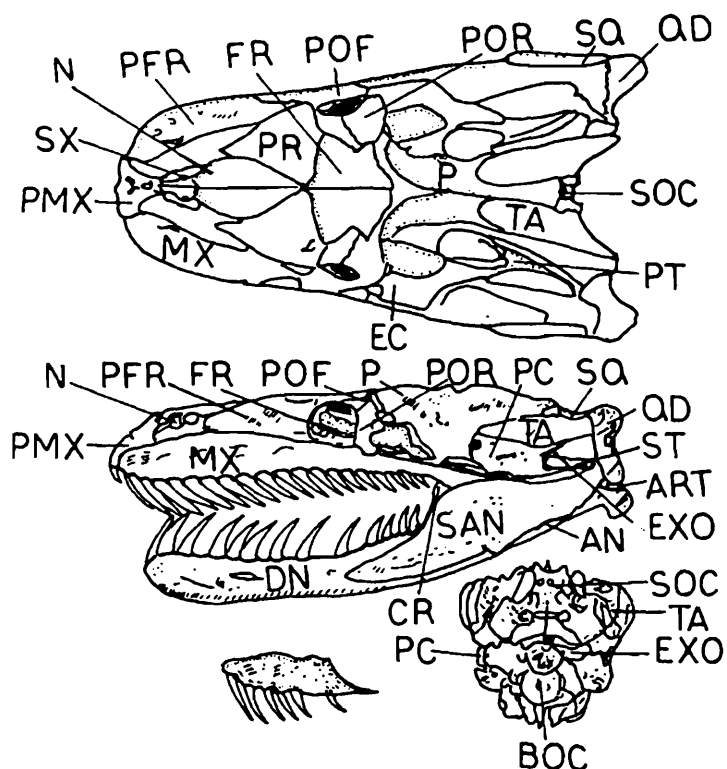


Fig. 55. Skull bones : *Python molurus*

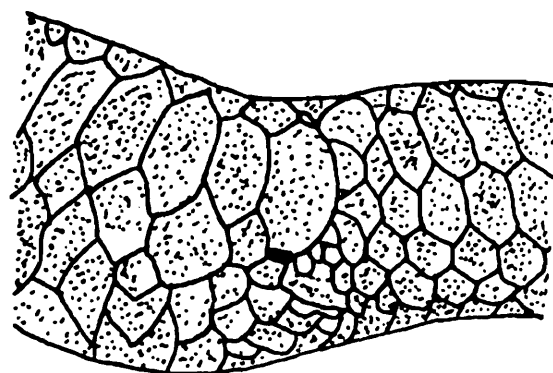


Fig. 56. Anal region of *Python molurus*, showing vestigial hind-limbs.

**Distribution :** This species is distributed in India, Pakistan and Sri Lanka.

**Habits and habitat :** The Azar inhabits marshes, moist forests and wet rocky ledges near streams and pools in almost all the parts of Ganga basin. It occupies burrows, dense clumps of vegetation, large rotten logs, caves, crevices and ruins. It is an excellent climber and at certain occasions suspends itself from the branch of a tree, waiting motionless for a prey to come within its reach. It is extremely fond of water, an expert swimmer and spends considerable time in the water and can remain submerged for at least half an hour, when needed. Pythons have been seen swimming in Ganga wholly submerged except for the tip of the snout. Python is most active at night but lethargic and slow moving during the day. It crawls in an almost straight line, leaving a distinctive track. It hibernates in winter into hollows of trees, underneath rocks or in rock shelves. In Ganga basin its courtship and mating takes place during hibernation (between late December to middle of February). On provocation the Python produce loud hissing sound and strike effectively, inflicting deep wounds on the body of the intruders. Pythons can be tamed and behave like good natured docile pets. The food comprises mainly the reptiles, birds and mammals. The prey is killed by constriction and swallowed by the side of head. It is oviparous and female exhibits parental care by coiling herself round the eggs. The single clutch of eggs, generally comprises from 60 to 100 white, soft eggs (126 cm.). The incubation period is from 50-60 days and hatchlings at the time of birth measure from 65-75 cm. in length. A healthy Python in nature survives for more than 30 years and its survival record in captivity is over 22 years.

*Status* : The Python used to be common in the major part of the Ganga basin but during the recent years its population has considerably declined and the species has become vulnerable on account of over-exploitation during the last sixty years. The main cause of the decline in number of the species to this alarming level is due to the existing illegal trade in its skin. Large number of Pythons are killed every year in North India for their skins, which are in high demand all over the world for the fancy leather goods. Nowadays this Python has been protected under Schedule I of the Indian Wildlife (Protection) Act, 1972, and under Appendix I of CITES.

### RETICULATED PYTHON

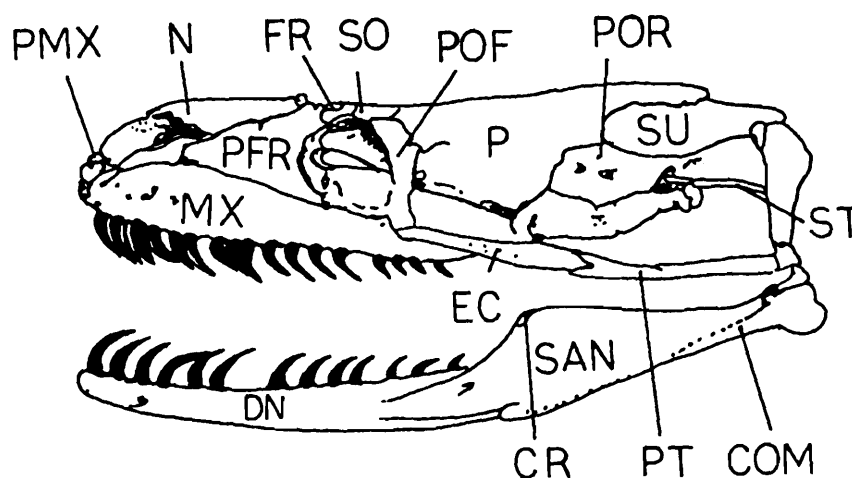
#### 70. *Python reticulatus* (Schneider 1801)

(Text figs. 57, 58 & 59)

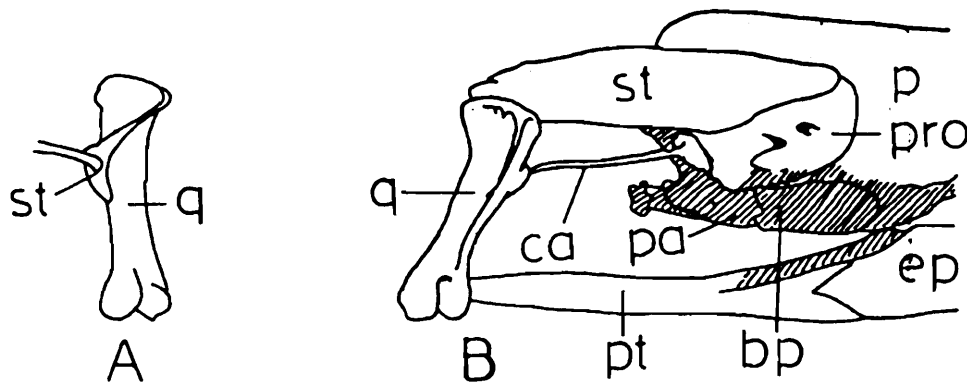
1801. *Boa reticulata* Schneider *Hist. Amph. ii.* : 264 (based on Seba *i.* pl. 58, fig. 2 and *ii.*, pl. 79, fig. 1; no type loc given).

1943. *Python reticulatus*, Smith, *Fauna Brit. Ind.*, 3 : 109.

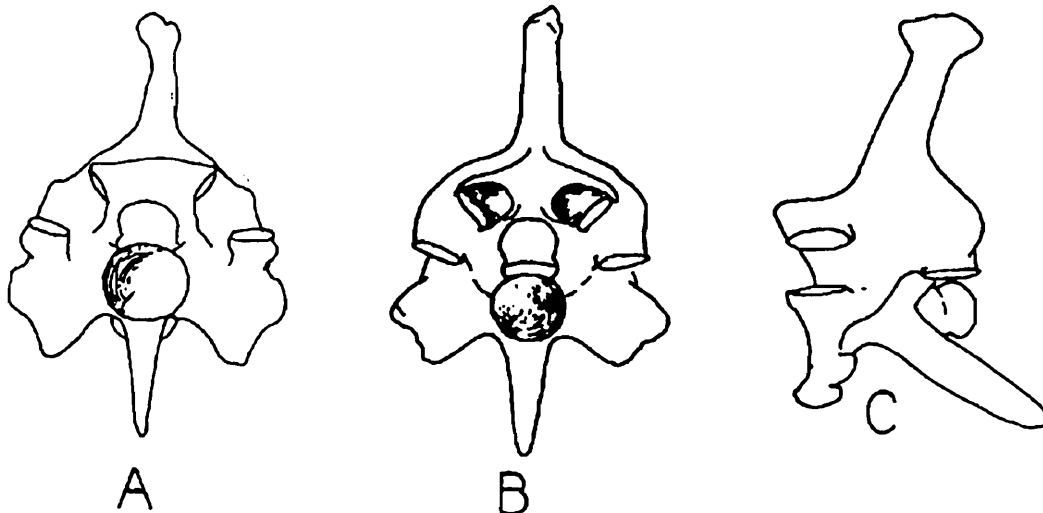
The Reticulated Python is one of the largest snake available today, it reaches to a maximum length of about 10 meters or may be more. In general morphology and head and body scalation it is like *Python molurus* but differs in the following characters : Four anterior most supralabials are deeply pitted; 2 or 3 anterior and 5 or 6 posterior infralabials are feebly pitted; 6th or 7th supralabial touch the eye; supraocular scales are not present; body scales are in 70-80 rows; Ventrals are 297-332; subcaudals, 75-102, most of them are divided; anal shield is entire. Dorsal colouration indicates the profuse admixture of deep yellow, brown and black colours with a remarkably shining, polished texture; the head is uniformly brown, with a thin black streak on the snout and one along the middle of the head; a dorsal series of large dark-brown, circular, oval, rhomboidal and irregular spots generally meeting with one another; all the spots are with a black inner, and yellow outer border; such colouration, which is the admixture of two colours descends upon the lateral aspects forming a regular series



**Fig. 57.** *Python reticulatus* (Reticulated Python)



**Fig. 58.** Ear bones : *Python reticulatus* A. Attachment of stapes, st., to quadrate q., seen from the inside. B. Auditory apparatus, seen from the right side. bo., basioccipital; bp. basisphenoid; ca., columella auris or stapes; ep., ectopterygoid (or transpalatine); p., parietal; pro., prootic; pt., pterygoid; q., quadrate; st., supratemporal.



**Fig. 59.** Anterior dorsal vertebrae of *Python reticulatus* A. Anterior view., B., Posterior view., and C. Lateral view. a.c., articular surface of centrum; c., centrum; hyp., hypapophysis; n.s., neural spine; proz., prezygapophysis, piz., postzygapophysis; rib., facets of rib; tr. p., transverse process; zy., zygantrum; zs., zygasphene.

of distinct vertebral bars or V-shaped markings, each one of which encloses a white area; Ventrals are whitish or yellowish, the outer margins are profusely spotted with brown.

*Distribution* : India : North-eastern India and Nicobar Islands.

*Elsewhere* : Burma (Tenasserim); Thailand (upto lat-18°); Vietnam (Yen-Bai, Tong-King in north); Malaysia (main land and Archipelago).

*Habits and Habitat* : Inhabits dense forests. This snake is extremely fond of water, swims freely and can go upto considerable distance in sea. The main food comprises small mammals in its natural surroundings of forests. Some times this Python comes near the human habitations in search for food and records reveal that it consumed

fowls, ducks, cats, dogs, pigs and even human beings. It lays about 15-100 eggs in a single clutch; incubation period is 60-80 days and at the time of emerging from eggs, young snakes measure from 600-750 mm.

*Status* : Endangered or Vulnerable, throughout its range.

### Genus 13. *Eryx* Daudin 1803

#### SAND BOAS

1803. *Eryx* Daudin, *Mag. Encycl. An.*, 8 : 437 (type *turcicus*).

1943. *Eryx*, Smith, *Fauna Brit. Ind.*, 3 : 111.

This genus comprises robust, short-tailed cylindrical snakes, slightly less than a meter in length; head not distinct from neck; eyes are small, with vertically elliptical pupil; whole body is covered with small scales; top of head covered with minute scales except on the snout, ventrals do not cover the whole width of the Ventrum; subcaudals are not divided; mental groove is present; all the species are devoid of genials; anterior maxillary and mandibular teeth are very long. The genus comprises 7 species distributed in North Africa, south-eastern Europe, western China, Sri Lanka and Pakistan.

#### Two species are available in India

#### Key to the species of Genus *Eryx*

- I. Tail pointed; no mental groove ..... *Eryx conicus*  
 II. Tail blunt; a mental groove is present ..... *Eryx johni johni*

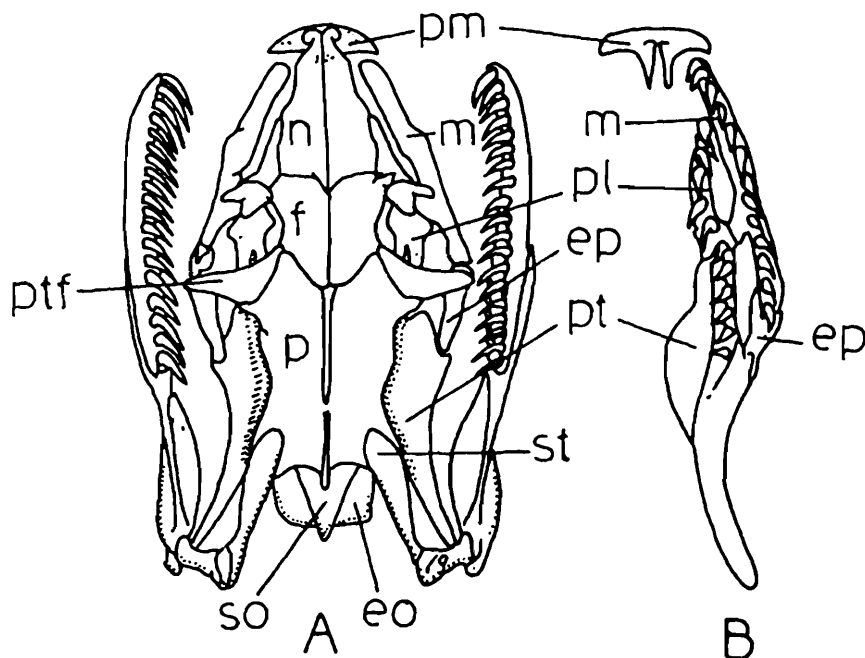
#### RUSSELL'S SAND BOA

71. *Eryx conicus* (Schneider 1801)  
 (Text fig. 60)

1796. Russell, *Ind. Serp.*, 1 : 5 pl. 4 (Madras).

1943. *Eryx conicus*, Smith, *Fauna Brit. Ind.*, 3 : 112.

This is a robust snake, body is cylindrical which tapers abruptly. Just anterior to vent, total length not exceeding 950 mm. in females and 590 mm. in males; head is slightly distinct from the neck; rostral shield is wide, about two times greater than its vertical width, just visible from above, without angular horizontal free edge; nostril is like a slit and situated between the two nasals and the internasals; the head is covered with small scales except nasals and internasals, which are enlarged; 8-10 scales across the forehead between the eyes; supralabials are 11-13; infralabials are 12-17; mental groove is not available, chin shields are not present; eyes are small but distinct, surrounded by 10-15 minutes scales; in certain individuals two series of scales separate the eyes from the labials; dorsal body scales are with keels, which are



**Fig. 60.** Skull : *Eryx conicus*. A. Dorsal view, B. Premaxilla and palato-maxillary arch. ca., columella auris (or stapes); eo., exoccipital; ep., ectopterygoid; f., frontal; m., maxilla; n., nasal; p., parietal; pl., palatine; pm., premaxilla; prf. prefrontal; pt., pterygoid; q., quadrate; ptf., post-frontal; q., quadrate; so., supraoccipital; st., supratemporal.

more prominent, tuberculated and heavy on the posterior third of body and tail; scale rows at the middle of body are 40-55; ventral scales, 161-196; subcaudal scales 16-24; anal is small undivided, flanked by one or two small plates on each side; tail is very short and bluntly pointed; hemipenis is not forked, sulcus bifurcates near the tip of the organ, strongly flounced and the folds are arranged in oblique series; distally these hemipenial folds unite and form large cup-shaped structures. Dorsal colouration is yellowish, brownish or grayish mixed with a dorsal series of prominent dark-brown, black-edged spots; those spots are generally fused with each other and lateral series is irregularly scattered; most of the individuals are with a dark stripe behind the eye; ventrum is yellowish or whitish, in many individuals the outer scale-rows are with small brown spots or with scattered gray flecks.

*Distribution* : India : Whole of India : Gujarat : Bhavnagar, Banaskantha, Vadodara, Surendranagar, Dangs and Kachchha districts.

*Elsewhere* : Sri Lanka, Afghanistan and Pakistan.

*Habits and habitat* : This nocturnal sluggish snake is a strong burrower in loose sand or loose silty soil; this is a pugnacious species and bites savagely, inflicting painful bites; it is viviparous snake and produces about 6-11 young at a time, the breeding season starts in May and extends upto end of July; its food comprises small mammals, birds, reptiles, amphibious and large insects; it kills the prey by constriction.

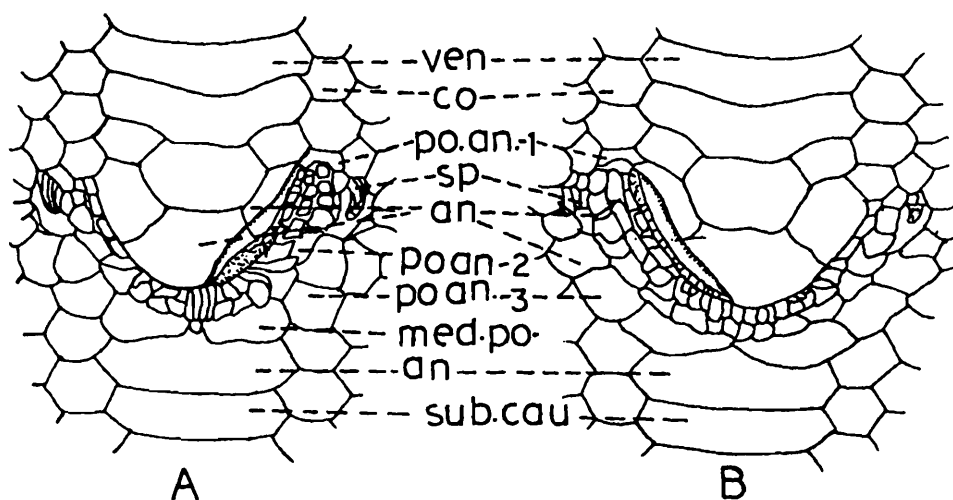
*Status* : It is common snake, throughout its range.

INDIAN SAND BOA  
or  
JOHN'S SAND BOA  
72. *Eryx johni johni* (Russell 1801)  
(Text fig. 61)

1801. *Boa johni* Russell, *Ind. Serp.*, 2 : 18 & 20, pls. 26 & 27.

1943. *Eryx johni johni*, Smith, *Fauna Brit. Ind.*, 3 : 113.

The body is robust, cylindrical which tapers a little just anterior to vent, total length not exceeding 1080 mm in females and 980 mm in males; head not distinct from the neck, snout broad, wedge-shaped; rostral shield is wide, heavy, broader than its vertical width, quite visible from above and with angular horizontal edge; nostril is like slit and situated between the two enlarged nasal scales; in most cases two pairs of broad scales are present behind the rostral; the other scales on the top of the head in front of the eyes are quite larger than the scales which are posterior to them; 6-9 scales are available across the forehead between the eyes; eyes are distinct and completely surrounded by 9 to 12 small scales; in certain individuals two series of scales are present, separating the eyes from the labials; supralabials are from 9-12; infralabials are 13-18; mental groove is available; chin shields are not present; dorsal scales are smooth or feebly keeled on the anterior but are heavily keeled in the posterior region; scale rows at the middle of body are 51-67; ventral scales, in males 193-212, in females 198-215; anal shield is small and undivided, boarded by a small plate on either side; sub caudals in males 28-40, in females 29-34; tail ending into a large blunt shield; hemipenis is almost as available in conicus, but the bifurcation of the sulcus is far then back and the calyces is more distinct. Dorsal colouration is



**Fig. 61.** Ventral view of the scales of the anal region of (A) the male and (B) female of *Eryx johnii johnii*. A portion of the anal-left A, and right B has been turned to one side so as to show the scales underneath it. An., anal scale; Co, costal; Med. Po. an, median postanal; Po. an. I, first row of postanals; Po. an. II, second row of postanals; Po. an. III, third row of postanals; Sub cau, Subcaudals; ven., Ventrals.

sandy, grayish, yellowish or bronzy, the scales edged with dark brown in many individuals; many snakes are almost uniformly coffee coloured to dark brown with slight pale motting on the flanks and with indistinct and light coloured tail rings; many snakes are with uniform or with more or less distinctly visible darker transverse bands, which are more distinct on the tail region; ventrum is whitish, spotted with dark brown or almost entirely brown.

*Distribution* : India : Gujarat : Junagarh, Bhavnagar, Kachchha, Dongs, Vadodara, Panchmahal and Gandhinagar districts; Recorded from Andhra Pradesh, Maharashtra, Tamil Nadu, Punjab, Rajasthan and Uttar Pradesh in India.

*Elsewhere* : Sri Lanka, Pakistan, Afghanistan and Iran.

*Habits and habitat* : This snake is docile, gentle, strongly borrowing, sluggish and nocturnal in habits and prefers to live in flat arid areas with loose clay soil with sparse grass; it is not common in extreme sandy areas, and is rare or absent in rocky and damp places. The breeding season starts in June and extends upto September, it is a viviparous and 5 to 14 young ones are produced. Its food comprises small mammals, birds and insects and the prey is killed by constriction.

*Status* : It is a common snake throughout its range.

#### Family VII. ACROCHORDIDAE Bonaparte 1840

1840. *Acrochordidae* Bonaparte, *Mem. Acad. Sci. Torino.*, **2** : 393.

1943. *Acrochordidae*, Smith, *Fauna Brit. Ind.*, **3** : 131.

This family comprises wart snakes in which the scales are small and generally granular; ventral scales are slightly larger than the other dorsal scales; body is slightly flattened on lateral aspects; head is distinctly broader than the neck, tail is short and prehensile; eyes are moderately large; teeth are uniform, moderate in size and are present on maxilla and dentary but premaxilla is devoid of teeth; mandibles are devoid of coronoid bone; ectopterygoid is a distinct bone and connects the pterygoid with the maxilla bone; pterygoid bone is well developed and reaches upto the quadrate; postorbital bone covers the supraciliary region; anterior portion of frontal is expanded on either side; prefrontal is a small bone, which is vertically suspended from the end of the expansion, do not extend forward upon the snout; all the bones of the anterior part of the skull are loosely united and provide a flexibility in the cranium; premaxilla and maxilla are separate; prefrontal and nasal are separate; supratemporal bone is freely movable on the cranium and firmly united with the very long quadrate; hypapophyses are developed throughout the vertebral column and pelvic vestiges are not present. This family comprises the large fish-eating water snakes forming a single genus, inhabiting the rivers, estuaries and coastal sea. The family is distributed from western coast of India to New Guinea in the east, upto Philippines in the north and upto the north coast of Australia in the south. This family includes 2 genera and 2 species (*Acrochordus* and *Chersydrus*).

Genus 14. *Chersydrus* Curier 1817

1817. *Chersydrus* Cuvier, *Regne Anim.*, 2 : 75 (type *fasciatus*).

1943. *Chersydrus*, Smith, *Fauna Brit. Ind.*, 3 : 131.

Head is not differentiated from the neck, covered above with small granular scales; nostrils are quite close and are encircled in nasal shield; eyes are small but distinct, situated on the upper surface of head, with vertically elliptical pupil; maxilla bears 12-15 subequal teeth on either side; anterior mandibular teeth are longest; mental is produced in a forward direction and fits in to a deep concavity in the upper jaw; a characteristic longitudinal depression is present in the chin just behind the mentum; body is quite stout and robust and covered with loose skin; general body scales are small juxtaposed or subimbricate; ventral shield are not present; tail is short, slightly compressed and prehensile. This is a monotypic genus distributed in the coasts of India, Vietnam, North Australia and Indo-Australian Archipelago.

## ELEPHANT TRUNK SNAKE

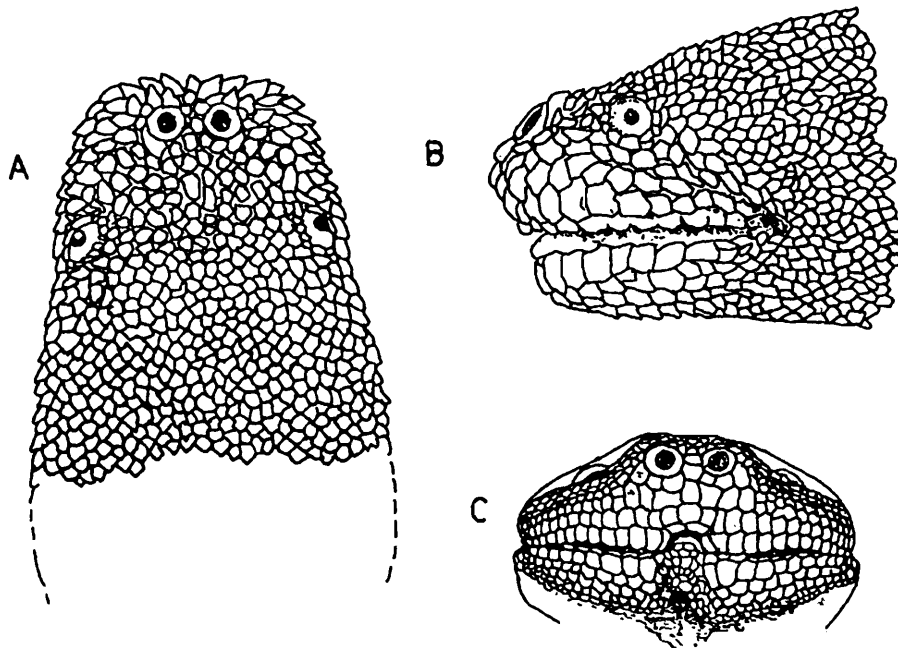
73. *Chersydrus granulatus* (Schneider 1799)

(Text fig. 62)

1799. *Hydrus granulatus* Schneider, *Hist. Amphib.*, 1 : 243.

1943. *Acrochordus granulatus*, Smith, *Fauna Brit. Ind.*, 3 : 134.

This robust snake reaches to a length of about 1100 mm, head is not distinct from neck and is covered with small granular scales; eyes are absolutely lateral in position; nostrils are on the upper surface of the snout and point mainly upwards; scales on



**Fig. 62.** *Chersydrus granulatus* (Schneider). Head : A. Dorsal view, B. Lateral view, C. Frontal view.

the snout are comparatively larger than the scales on the posterior part of the head; nasal shields are circular, which encircle the nostrils; an enlarged scale is present behind each nasal shield; a series of about 8-11 scales are present between the eyes; a series of enlarged scales are present on the lips separated from the border of the mouth by smaller scales; body is having about 100 at the middle which are juxtaposed or feebly imbricate and with a short keel or tubercle at the center; a fold of loose skin is available along the middle of the belly which is covered with small spine bearing scales; posterior portion of body and tail are strongly compressed; hemipenis is forked for more than half its length, and longitudinally pleated throughout, the folds on the distal half is with spines, lips of the sulcus are quite prominent and are devoid of spines. The general body colouration is dark-grey or somewhat blackish with whitish annulation all over the body, which is quite distinct in juveniles but as the age increase the colour becomes faint; this annulation is more prominent on the dorsal aspect, bands are broaden comparatively than the bands present on the ventrum; dorsal aspect of head is dark-grey with lighter spots; many individuals appear quite white dark cross-bands.

*Distribution* : India : Gujarat : Coastal areas of Bhavnagar, Vadodara and Valsad district; the coastal waters of India (about Nicobar islands).

*Elsewhere* : Pakistan; Sri Lanka; Vietnam; Indo-Australian Archipelago; north Australia and Soloman Islands.

*Habits and habitat* : This extremely sluggish snake inhabits mainly the estuaries and shallow coastal waters throughout its range; feeds mainly on fishes; it is quite docile and generally do not make any attempt to bite but on extreme rough handling bites, causing deep wounds on account of its large teeth; is a viviparous species and produces from 6 to 8 young at a time. Its movements are very slow and worm-like on the ground.

*Status* : Most common throughout its range, quite common in Gujarat.

#### Family VIII. COLUBRIDAE Cope 1893

1811. *Colubrini* Opper, *Ord. Gatta. Farm. Munich.*, : 47.

1893. *Colubridae* Cope, *Amer. Nat.*, 480.

1943. *Colubridae*, Smith, *Fauna Brit. Ind.*, 3 : 114.

This cosmopolitan family comprises a very large number of snake, roughly more than 2500 species and subspecies of arboreal, burrowing (subterranean), terrestrial and aquatic snakes distributed over 250 genera. These small, moderately large very large snakes exhibit lot of diversity and are having the following general characters.

The head may or may not be distinct from the neck; the tail is generally long; the dorsal scales are small to medium and exhibit plenty of variation in size and micro-scale structures, more or less rhomboidal or oval in shape and overlapping; the ventral

scales are transversely enlarged and constitute a single row; eyes are comparatively large and prominent; teeth are solid, numerous, backwardly pointed, show lot of variation, pointed present along the entire length of the maxilla and dentary, many species bear teeth on the palatine and pterygoid; the posterior maxillary teeth may be opisthoglyphous (grooved to carry poison) but not in the form of an elaborate fang like Elapidae; lower jaw is devoid of coronoid; pterygoid generally reaches to the quadrate; facial bones are movable, prefrontal is not in the contact with the nasal; supratemporal is generally attached loosely to the skull, moves freely on the cranium, suspends the quadrate in a slanting fashion and quite backward to increase the gape of the jaws; the maxilla has got a flexible articulation with the ectopterygoid which extends posteriorly above the pterygoid.

### Key to the Subfamily of the Family COLUBRIDAE

- I. Posterior dorsal vertebrae without hypapophysis; mental groove not present...  
..... DIPSADINAE
- II. Posterior dorsal vertebrae with or without hypapophysis; mental groove is present.
  1. Maxillary teeth not grooved; nostril in a large concave shield; scales completely or almost completely attached to the cutis ..... XENODERMINAE
  2. Maxillary teeth solid or anterior part with solid teeth but 2 or 3 posterior teeth are grooved; nostrils not valvular, usually lateral; scales imbricate .....  
..... COLUBRINAE
  3. Last 2 or 3 maxillary teeth enlarged and grooved; nostrils valvular, situated on the upper surface of the snout; scales may be smoother striated or strongly keeled; ventrals narrow ..... HOMALOPSINAE
  4. Palato-maxillary arch devoid of teeth except for a few (2) minute teeth followed by two small grooved fangs at the posterior extremity; nostril in the form of a large pit in the posterior part of the nasal shield; scales are smooth; hypapophysis of the anterior thoracic vertebrae penetrating the wall of the oesophagus .....  
..... ELACHISTODONTINAE

#### Subfamily DIPSADINAE Amaral 1923

1923. *Dipsadinae* Amaral, *Proc. New Eng. Zool. Club*, 8 : 95.

1943. *Dipsadinae*, Smith, *Fauna Brit. Ind.*, 3 : 115.

Both the jaws bear solid teeth; supratemporal bone is reduced to short bony rod interposed between the cranium and the quadrate bone; only the cervical vertebrae bear the hypapophysis; genial shields large, broader than long and touch the infralabials; mental groove is not present in Asiatic species; commissure of the mouth projects far back beyond the fringe of the buccal membrane; head is short, comparatively high; eyes are quite large and nasal gland is enormously developed.

### Key to the genera of subfamily DIPSADINAE

- I. Body scales in 15 rows; subcaudals paired ..... *Pareas*  
 II. Body scales in 13 rows; subcaudals are single ..... *Haplopeltura*

#### Genus 15. *Pareas* Wagler 1830

1830. *Pareas* Wagler, *Syst. Amphib.*, : 181 (type *carinatus*).

1943. *Pareas*, Smith, *Fauna Brit. Ind.*, 3 : 116.

Head is quite distinct from neck; eyes are large or moderately large, with vertical pupil; Body is almost compressed; tail moderately compressed; rostral shield is as high as broad or may be little higher; nostril is situated in the nasal shield; genial shields are distinct, first pair is largest, longer than broad, either in contact with the mental shield or separated from it by the first pair of infralabials; anal shield is entire; hemipenis is deeply forked and without spines; skull characters reveal that upper jaw has got a short, thin, vertically expanded maxilla with from 4-9 subequal solid teeth preceded by a teethless space; mandibles bear teeth, which gradually decrease in length; almost a complete roofing of the orbital region of skull takes place on account of the extreme backward prolongation of the prefrontal bone; body scales are, 15 rows throughout; ventral are rounded and subcaudal shields are paired. This genus includes 15 species comprising terrestrial, subarboreal, nocturnal, gentle inoffensive, oviparous (2-9 eggs are laid at a time) and slug eating snakes. The genus is having its distribution in complete Indo-Chinese subregion, South China and Malaysia (including Archipelago).

#### Key to the species of Genus *Pareas*

- I. Head distinct from neck; body not strongly compressed; eye moderately large; Vertebral scales not enlarged; body scales keeled ..... *Pareas macularius*  
 II. Head very distinct from neck; body strongly compressed; eye very large; Vertebral scales enlarged; body scales smooth or feebly keeled.  
 1. Preocular shield not present; loreal shield forms a broad contact with the eye ..... *Pareas monticola*  
 2. Preocular shield is present; loreal shield excluded or just touch the eye ..... *Pareas hamptoni*

#### DARJEELING SNAIL-EATER

#### 74. *Pareas macularius* Theobald 1868

1868. *Pareas macularius* Theobald, *J. Linn. Soc.*, 10 : 54 (Martban, S. Burma; London and Calcutta).

1943. *Pareas macularius*, Smith, *Fauna Brit. Ind.*, 3 : 118.

In this snail eating snake body is much compressed and size is quite variable between males and females, males hardly exceed 345 mm in standard length, tail 75 mm while in females the body length reaches upto 470 mm and tail is almost equal in males and females. Eye is moderately large, its diameter is almost equal to or a little less than its distance from the mouth; prefrontal shields are almost two times or a little less the length of the internasal shields and are in contact with the eye; length of the frontal shield is almost equal to its width, it is longer than its distance from the end of the snout, shorter than the parietals; loreal shield is longer than high; one pre-ocular and one postocular shields are present, the latter generally forms a union with long subocular shield; temporals 2+3, long and narrow; supralabials 6 or 7, 4th below the middle of the eye; body scales are smooth, the medium 3-7 dorsal scale rows are keeled; Ventrals in males 148-166, in females 154-165; subcaudals in males 40-53 while in females 39-45; the hemipenis is forked at the junction of the proximal one-third and distal two-thirds and the organ extends upto the 12th caudal plate. Hemipenis is demarcated into four distinct zones : 1. A small area near the tip composed of longitudinal folds, 2. An area of small uniform calyces, 3. An area in which the calyces become more papillose in character and 4. A proximal area near the bifurcation with large, smooth longitudinal folds. Dorsal colour is grey with black and white transverse bars and spots on sides; ventrum whitish densely spotted with dark grey or black.

*Distribution* : India : West Bengal (Gopal dhara, Darjeeling district).

*Elsewhere* : Burma (Htingnan, lat. 26°36", long. 97°52", Mogok, Kyaphyin, Shwali Man, Kalaw, Martaban); Upper Laos; Tong-King.

*Status* : Indeterminate, but out of danger.

#### ASSAM SNAIL-EATER

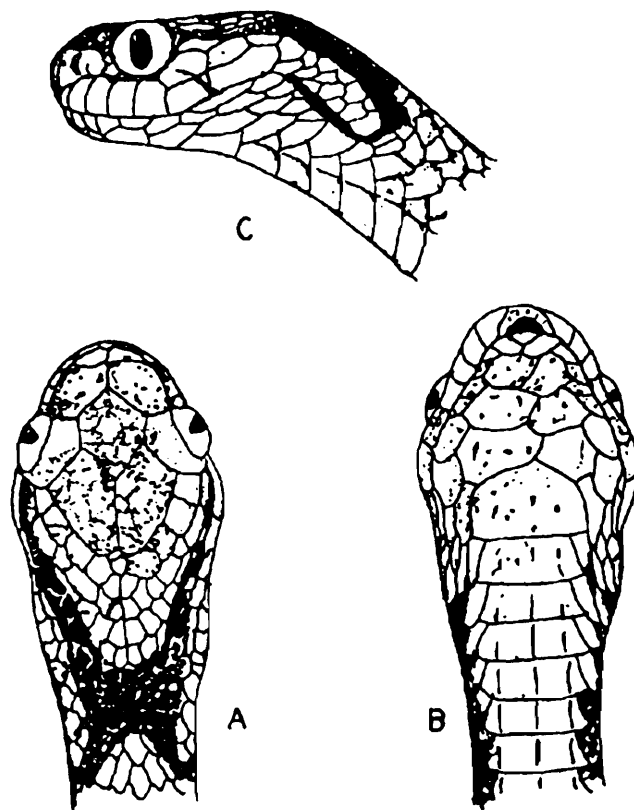
##### 75. *Pareas monticola* (Cantor 1839)

(Text figs. 63 & 64)

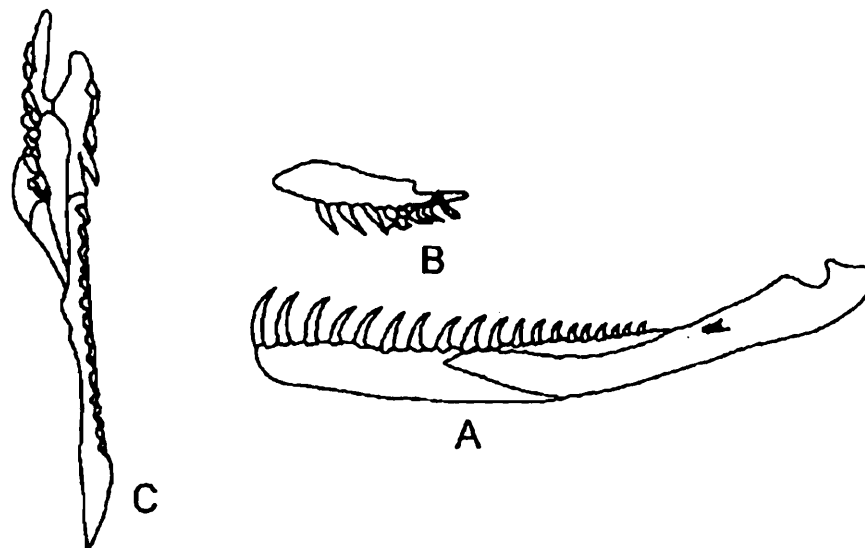
1839. *Dipsas monticola* Cantor, *P.Z.S.*, : 53 (Naga Hills, Assam; London, Col. Sketch in Bodleian Library).

1943. *Pareas monticola*, Smith, *Fauna Brit. Ind.*, 3 : 118.

Assam snail eater is a moderately large snake in which males are smaller with a standard length of 560 mm, tail 130 mm while the females are with a standard length of 730 mm and tail about 150 mm. Eyes are prominent and quite large their diameter is more than their distance from the mouth; length of internasal shield is almost half of the length of prefrontal shields is almost half of the length of which are in contact with the eye; frontal shield is longer than its distance from the end of the snout but it is shorter than the parietal shields in length; loreal shield forms a broad contact with the eye; preocular shield is missing; a subocular shield is present which touch the loreal and separate the anterior labials from the eye, in some snakes touch the



**Fig. 63.** *Pareas monticola* (Cantor). Head : A. Dorsal pattern, B. Ventral pattern and C. Lateral pattern.



**Fig. 64.** *Pareas monticola* (Cantor). Jaw bones : A. Mandible, B. Maxilla, C. Palato-maxillary arch.

postocular shield; postoculars are two (one upper, another lower), the lower shield is elongated and extends below the eye; temporals are 2+2 or 2+3, supralabials 7, last one is longest, 3rd, 4th or in certain cases 4th only touch the eye, in certain snakes suboculars come in the way, thus excluding the labials to touch the eye; body scales are smooth, the vertebral series of scales enlarged; ventrals : in males 180-196; in females, 177-195; subcaudals in males, 79-87 and in females, 69-80. Hemipenis is

deeply forked and reach upto the 15th caudal plate; organ is calyculate (except for a small area near the bifurcation), the calyces are small but their size increases slightly, near the bifurcation and there become slightly scalloped; for a short distance at the proximal end of the calyculate area the calyces are replaced by folds. Dorsal colour is brown, with black vertebral cross-bars extending on the lateral aspects; a black streak from upper part of the eye to the nape, another line from behind eye to the angle of the mouth; top of head densely spotted with black; Ventrums are yellow with brown dots.

*Distribution* : India : Sikkim; West Bengal, Darjeeling; Assam & North-east (Jaipur, Nagal Hills, Sadiya Frontier Tract and Abar foot-hills).

*Status* : A common snake in most of its range.

#### BURMESE SNAIL-EATER

##### 76. *Pareas haptoni* (Boulenger 1905)

1905. *Amblycephalus hamptoni* Boulenger, *J. Bombay N.H.S.*, **16** : 236, pl. (Mogok, Burma; London).

1943. *Pareas hamptoni*, Smith, *Fauna Brit. Ind.*, : 120.

Length in males and females like *Pareas monticola*. It is a short snouted snake with large eyes, whose diameter is much greater than its distance from the mouth, prefrontals are two times larger than the internasals and touch the eye; frontal larger than its distance from the end of the snout and shorter than parietals; loreals is as high as long, or may be higher; preocular is one, postocular is one both shields are separated by a long subocular shield; sometimes postocular and subocular shields are united; temporals 2+2 or 2+3; supralabials 7 or 8, 4th or 5th below the middle of the eye; body scales are smooth or the median series may be feebly keeled; vertebral 1-3 rows are slightly enlarged; Ventrals : In males 191-196, in females 180-194; subcaudals : in males 93-98, in females 73-97. Hemipenis is short and extends upto the 9th caudal plate, deeply forked; calyculate throughout, the calyces are very large and uniform in size. Colouration is like *Pareas monticola*.

*Distribution* : Burma : In Upper Burma places like Mogok; Pangnamdim; Paira a or triangular area between the N'mai Kha and Malikha Rivers as far north as lat. 27°, south of lat. 26° they combine to form Irrawaddi River; North-East Thailand (near Pak lai, lat. 18°, Upper Mekong); Tong-King; Hainan (Five Finger Mountain); Annam (as far south of Kontum, lat. 18°25").

*Status* : A common snake but insufficiently known.

#### Subfamily XENODERMINAE Cope 1898

1898. *Xenoderminae* Cope, *Ann. Rep. Nat. Mus.*, 1900 : 731.

1943. *Xenoderminae*, Smith, *Fauna Brit. Ind.*, **3** : 123.

The subfamily is characterised by having a supraorbital bone in the skull; strong lateral expansions are formed on the vertebral zygapophyses except in two genera *Achalinus* and *Fimbrios*; scales form an intimate contact with the cutis in most species and are separated from one another by naked skin; head with granular or shield-like scales; labials are with averted margins; nostril is situated in a large broad, concave shield. This subfamily is distributed in Vietnam (Indo-China), Malayan Archipelago and Central America. Two genera viz. *Stoliczkaia* and *Xenodermus* (represented by a single female specimen belonging to species *Xenodermus javanicus* Reinhardt, collected by Robison & Kloss at Victoria Point in south Tenasserim district of Burma).

#### Genus 16. *Xenodermus* Reinhardt 1836

1836. *Xenodermus* Reinhardt, *Overs. Viden. Selsk Forth.*, : 6 (type *javanicus*).

1943. *Xenodermus*, Smith, *Fauna Brit. Ind.*, 3 : 123.

Head is quite distinct from the neck; body is slender, slightly compressed and tail is quite long in comparison to the body; eyes are moderately large with vertically elliptical pupil; nostril is distinctly large and pierced in a large concave nasal; vertebrae are with expanded spine-like projections and strong lateral expansions are available on the zygapophyses; maxillae with 15 equal sized teeth; internasal and prefrontal shields are distinctly large but rest of the head is covered with small granular, keeled scales; body scales are small, elliptical and keeled and with three longitudinal series of enlarged tubercles (one vertical and two dorso-lateral). This genus is represented by a single species, *Xenodermus javanicus* from Malayan sub-region of the oriental region.

#### 77. *Xenodermus javanicus* Reinhardt 1843

1843. *Xenodermus javanicus* Reinhardt, I.c.s. and K. Danske Vidensk. *Selsk Skrift.*, 10 : 257, pl. ii, figs. 1-8 (Java).

1943. *Xenodermus javanicus*, Smith, *Fauna Brit. Ind.*, 3 : 124.

This is a moderately large snake in which males reach to a maximum length of 920 mm (tail 250 mm) and females 890 mm (tail length 245 mm). Dorsal colouration is from dark brown to black; sides and ventrum are distinctly gray. Internasal shields are narrow and project backwards above the nasal shields; prefrontal shields are distinct but are separated from one another by granular scales, remaining portion of the head is covered with minute, juxtaposed, keeled scales; upper and lower labials are small, arranged in series, their posterior edges are averted; first pair of infralabials are narrow and are in contact with one another behind the mental; a pair of elongated genials is distinctive character; lateral aspects of body are with very small, elliptical, keeled scales and are separated from one another by naked skin; middorsal portion (between the lateral tubercles) with very small, juxtaposed, keeled scales; three series of much enlarged, keeled tubercles extending the whole length of body and tail are

present (a vertebral series composed of 3 juxtaposed rows and two dorsolateral series with single rows of scales); ventral shields, in males 171-177 and in females 176-186; subcaudal shields, in males, 147-165 and in females, 133-150; Anal shield is 1. In a female specimen collected from Victoria point, S. Tenasserim, Ventrals are 170 and subcaudals 103 (the extreme tip of the tail is broken).

*Distribution* : The Malayan sub-region (Java, Kopstein); Burma (South Tenasserim near Victoria Point).

*Habits and habitat* : It is a nocturnal species and prefers to live in loose, wet soil and has been recorded upto slightly over 3000 ft. in the hilly terrain of Java. Generally it is found near the cultivations, where it moves slowly in the search of frogs. The specimens from Tenasserim (Burma) and from Malaysia were collected at sea-level near the coast. Not much is known about the breeding habits, except that it lays from 2-4 eggs in single clutch.

*Status* : It is in abundance in Java, in less number in Malaysia and rare in Burma.

#### Genus 17. *Stoliczkaia* Jerdon 1870

1870. *Stoliczkaia* Jerdon, *Proc. Asiat. Soc. Bengal*, : 81 (type *khasiensis*).

1943. *Stoliczkaia*, Smith, *Fauna Brit. Ind.* 3 : 125.

This genus includes the snakes with slender, compressed body; head very distinct from neck, with large shields which may be entire or separated by scales; posterior one-third of head and temporal regions are covered with small scales, like those available on body; teeth are small, almost equal in size, 16-20 in each maxilla; vertebrae with elongated spine-like processes, strong lateral expansions are present on the zygapophysis; nostril is situated in a large concave nasal; eyes are large with vertically subelliptic pupil; body scales are small, elliptical, keeled, juxtaposed or separated from one another by naked skin, in 29-31 rows; ventral shields are large, tail is long and slender, subcaudals, single. This genus includes two species, one is available in Assam and another one in Borneo.

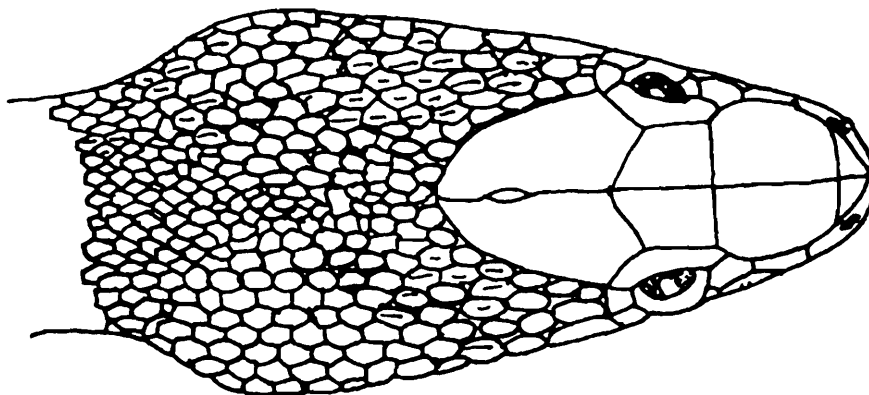
#### 78. *Stoliczkaia khasiensis* Jerdon 1870

(Text fig. 65)

1870. *Stoliczkaia khasiensis* Jerdon, *P.A.S. Bengal*, : 81 (Khasi Hills; London).

1943. *Stoliczkaia khasiensis*, Smith, *Fauna Brit. Ind.*, 3 : 126.

The maximum length of this purplish-brown snake reaches upto 860 mm (tail 190 mm), its ventrum and three outer scale-rows are white with brown bases. Rostral shield is quite small, not visible from above; internasal shields are small and subtriangular; prefrontal shields are very large; frontal shield is distinct, its width is more than its length; frontal shield is almost 4 times as broad as the supraoculars,



**Fig. 65.** *Stoliczkaia khasiensis* Jerdon. Dorsal aspect of head.

half as long as the parietals, partly or completely divided by a longitudinal suture; a small loreal shield is available; 1 large pre- and 2 post ocular shield are present; upper labials are 8 in number, fourth and fifth touch the eye, last one is very long; anterior genials are partly separated from the infralabials by small scales; posterior genials are not present; dorsal body scales are separated from one another by naked skin; lateral scales are larger and juxtaposed; ventral shields are 208-210; subcaudals 115-116; anal is single.

*Distribution* : India : Assam (Khasi Hills).

*Status* : A rare snake, known by 2 specimens only.

#### Subfamily COLUBRINAE Cope 1898

1898. *Colubrinae* Cope, *Ann. Rep. U.S. Nat. Mus.* Part II, *Croc., Liz. and Snakes of N. Amer.* 1900, : 778, Boulenger, *F.B.I.* 1890, : 278, and *Cat. Sn. Brit. Mus.* I, 1893, : 177.

1943. *Colubrinae*, Smith, *Funa. Brit. Ind.*, 3 : 135.

In most cases the nostril is lateral; head shields are large and symmetrical; ventral shield are well developed; teeth are solid or the 2 or 3 posterior ones are grooved; hypapophyses absent or present on the posterior dorsal vertebrae.

#### Key to the Genera of the Subfamily COLUBRINAE

- I. All the teeth solid, not grooved (Aglyphous condition).
  - A. Posterior dorsal vertebrae are devoid of hypapophyses, its lower surface is smooth or with a low keel.
    1. Posterior maxillary teeth longest.
      - (i) **Pupil round**

**a. Longitudinal series of scales in odd numbers**

Last 2 or 3 teeth are generally larger and separated from the others by a distinct interval; one or more suboculars; scales in 19-33 rows; head is distinct from the neck.

1. Eye in contact with one or more supralabials, prefrontals paired .....  
..... *Argyrogena*
2. Eye completely separated from supralabials by oculars prefrontals 3 or more-  
SPHALEROSOPHIS last 2 teeth are largest and separated or not from the rest  
(12-20 teeth) by an interval; subocular is not present; scales in 23 rows .....  
..... *Coronella*
- 20-28 teeth are present, which gradually enlarged and form a continuous series;  
2 or 3 loreals are present; scales in 15-18 rows (17,16, 18 or 15 rows) .....  
..... *Ptyas*
- 25-30 teeth are present, which gradually enlarged and form a continuous series;  
the vertebral scales are enlarged; scales in 17 rows ..... *Xenelaphis*
- 6-16 teeth are present, the posterior ones are strongly enlarged and compressed;  
head slightly or not at all distinct from the neck; rostral shield is large, generally  
projects well on the upper aspect of the snout, body scales are smooth and are  
in 13-21 rows ..... *Oligodon*

**b. Longitudinal series of scales in even numbers**

14-18 rows of dorsal scales ..... *Zaocys*

**ii. Pupil vertically elliptic; 6-10 teeth**

13 or 15 rows of scales ..... *Dryocalamus*

19 rows of scales, snout cuneiform; rostral shield projecting ..... *Lytorhynchus*

**2. Maxillary teeth subequal; pupil round**

19-27 rows of scales; apical pits are present on scales ..... *Elaphe*

23-27 rows of scales, apical pits are present (elongated) on scales .....  
..... *Gonyosoma*

15 rows of scales; apical pits are not present; colour is green ..... *Opheodrys*

15 rows of scales; apical pits present colour not green ..... *Eirenis*

13-17 rows of scales; apical pits not present; colour not green ..... *Liopeltis*

13 rows of scales; loreal, internasal and temporal shields are not present .....  
..... *Calamaria*

- 19 rows of scales; a long, pointed nasal appendage covered with small scales is present.....**Rhynchophis**
- 13-15 rows of oblique scales; vertebral scales are enlarged; ventral and caudal scales with suture-like lateral keel and a notch on each side, corresponding to the keel .....**Dendrelaphis**
3. Anterior maxillary teeth are enlarged (some of anterior most teeth) and fang-like; pupil vertically elliptic; 15-19 rows of scales.
- 15-17 rows of smooth or feebly keeled scales; subcaudal scales divided, maxillary bone strongly arched ..... **Lycodon**
- 17 rows of scales; scales on median rows feebly keeled; sub caudal scales divided (paired); maxillary bone not arched ..... **Dinodon**
- 19 rows of strongly keeled scales; subcaudal scales single; maxillary bone strongly arched ..... **Cercaspis**
- B. Posterior dorsal vertebrae are with well developed hypapophyses forming a more or less developed crest or tubercle projecting below the centrum.
1. Dentary bone form loose attachment at the apex of the articular bone and freely movable on it; 30-50 equal sized teeth are present.
- 17 rows of smooth scales ..... **Sibynophis**
2. Dentary bone is not movable or very slightly movable on articular bone; generally less than 30 teeth are present.
- i. Posterior maxillary teeth are longest.
- a. Pupil is round, two internasal shields are available.
- 15-19 rows of scales, which are not disposed obliquely; 18-35 maxillary teeth are present, body robust ..... **Natrix**
- 17-19 rows of scales; 19-30 maxillary teeth, body slender ..... **Amphiesma**
- 19 rows of scales, 19-35 maxillary teeth, last 2 strongly enlarged but not grooved; body elongated ..... **Rhabdophis**
- 17 rows of smooth scales; 26-30 maxillary teeth; body moderately slender .....  
..... **Fowlea**
- 19 rows of scales, which are disposed obliquely anteriorly; 20-28 maxillary teeth are present, the last two abruptly enlarged ..... **Pseudoxenodon**
- 25-27 rows of scales, most of the scales are strongly keeled; 11-18 maxillary teeth are present which are followed by a pair of very large fangs .....  
..... **Macropisthodon**

- b. Pupil is round; one internasal shield is present.
19. rows of scales; nostril directed upwards and outwards ..... *Atretium*
- ii. Maxillary teeth squal in size, 20-25 in number; head distinct from the neck.
19. rows of strongly keeled scales; nostril is situated in nasal shield.....  
..... *Xenochrophis*
- iii. Maxillary teeth are almost equal in size, head is not distinct from the neck; 13-19 rows of scales.
- a. Nostril is directed forwards and outwards.
- 13-15 rows of scales; head shield normal or with a single prefrontal shield; 18-20 teeth are present ..... *Trachischium*
- 15-17 rows of scales; loreal shield is not present; a single internasal shield is present, 20-24 teeth are present.
13. rows of scales; no loreal shield; no preocular shield; 20-30 teeth are present...  
..... *Blythia*
- 13-15 rows of scales; no preocular; anterior genial scale very large; 28-30 teeth are present ..... *Xylophis*
17. rows of scales; no loreal; single internasal shield; 10-12 teeth are present .....  
..... *Haplocercus*

**b. Nostril is not directed forwards**

15. rows of scales; nostril lateral between two nasals or between them are the first labial; body not elongate ..... *Plagiopholis*
17. rows of scales; nostril is situated in nasal shield and it is valvular and crescentic; body elongate ..... *Rhabdops*
- II. All the teeth not solid, last 2 or 3 maxillary teeth grooved (Opisthogypha).
- A. Posterior dorsal vertebrae may or may not have hypapophyses.

**1. Pupil is round**

- 19 rows of scales; ventral shields rounded; maxillary teeth solid 20-24 in number, subequal ..... *Balanophis*
- 17 rows of scales; ventral and caudal shields with a suture-like lateral keel and a notch on each side corresponding to the keel, maxillary teeth solid 18-20 in number, subequal ..... *Chrysopelea*
- 17 rows of scales; maxillary teeth 10-13 in number, one or two in the middle are enlarged and fang-like ..... *Psammophis*

## 2. Pupil is Vertical

19-29 rows of more or less oblique scales, vertebral scales are enlarged; maxillary teeth are solid; 10-14 in number subequal..... ***Boiga***

23 rows of oblique scales, vertebral scales are not enlarged; maxillary teeth are solid, anterior ones are longest. .... ***Telescopus***

17 rows of scales; maxillary teeth are 18-20 in number, the median teeth are enlarged and fang-like ..... ***Psammodynastes***

## 3. Pupil is horizontal

15 rows of oblique scales ..... ***Ahaetulla***

### Genus 18. *Elaphe* Fitzinger 1833

1828. *Gonyosoma* Wagler, *Icon. Amphib* pl. a (Type *Viride* = *oxycephala*).

1943. *Elaphe* Smith, *Fauna Brit. Ind.*, 3 : 139.

This genus includes the snakes with elongate, cylindrical or slightly compressed body; head elongate, quite distinct from the neck; maxillary teeth 14-24, slightly enlarged anteriorly or posteriorly, scales in 19-27 rows, with paired apical pits, smooth or keeled; ventral shields rounded or angulate laterally; tail is quite long; subcaudal shields paired, nostril is between the two nasals; internasals shorter than the prefrontals; two anterior temporals are always available; five lower labials are always in contact with the anterior genials, which are as long as or a little longer than the posterior ones, the posterior genials are generally separated from one another by one or small scales; hemipenis is divided into three areas, distally it is calyculate, the cups being scalloped, with soft or spinous points; the second area, which is followed by a spinose area the spines being relatively large and few in numbers; they are thick and fleshy in appearance, the tip appears as uncovered point; the sulcus is not forked. The genus is distributed in Europe and Asia; North America including the islands of East Indies. More than 30 species are present in Asia.

### Key to the species of Genus *Elaphe*

#### 1. Loreal scale well developed

A. Dorsal colour is uniformly green, scales in 19 rows at mid-body .....  
..... ***Elaphe prasina***

B. Dorsal colour is not green

1. Occiput with a black bar; a black streak below the eye; two black streaks behind the eye; 19 rows of scales at mid-body, last labial below the eye touch the temporals; scales of the ischiadic region strongly keeled ..... ***Elaphe radiata***

2. Occiput is without a black bar
  - i. Head is with a black median and two lateral lines (connected with the first black-edged cross-bar on the body); 19 rows of scales at mid-body ..... *Elaphe prophyracea*
  - ii. Head is with a black stripe along the side, which passes through the eye; 23-25 rows of scales at mid-body ..... *Elaphe taeniura*
  - iii. Head is not with black stripe along the side
    - a. A black stripe below the eye, another oblique one behind it.
      - a.1. 19 rows of scales at mid-body, last labial below the eye touch the temporals; scales on the ischiadic region strongly keeled ..... *Elaphe flavolineata*
      - a.2. 23-29 rows of scales at mid-body; last labial below the eye touch the temporals; scales of the ischiadic region strongly keeled ..... *Elaphe helena*
    - b. No black stripes radiating from the eye; head uniformly brown or greyish above.
      - b1. 17 or 21 rows of scales at mid-body; V. 213-236 ..... *Elaphe cantoris*
      - b2. 23 rows of scales at mid-body; V. 233-247 ..... *Elaphe hodgsoni*

## II. Loreal scale is very small or absent

- A. 19 rows of scales at mid-body
  - a. prefrontal in contact with supralabials, 8 or 9 supralabials; scales in 15 rows at 2 head-lengths before the vent; dorsum is green; a black longitudinal stripe above the supralabials ..... *Elaphe frenata*
  - b. Posterior nasal in contact with the preocular; 7 supralabials; scales in 17 rows at 2 head - lengths before the vent; dorsum is brown; a V or U-shaped mark on the top of the head ..... *Elaphe leonardi*
- B. 21 or 23 rows of scales at mid-body; three black bands are present on the rostral, interorbital and portarbital areas of head ..... *Elaphe mandarina*

### GREEN TREE RACER

#### 79. *Elaphe prasina* (Blyth 1854)

1854. *Coluber prasinus*, J. A. S. Bengal, 23 : 241 (Assam, Calcutta).

1943. *Elaphe prasina*, Smith, Fauna Brit. Ind., 3 : 143.

The maximum length of this snake in males, 960 mm, tail 235 mm in females 110 mm, tail 350 mm. Dorsal colouration is uniformly green in adult individuals, the interstitial skin is with black and white reticulations, in many young snakes the body scales are with black edges; upper lip and ventrum is greenish white; ventral shields outside the lateral keel are generally white. Snout is almost two times longer than the diameter of the eye; posterior maxillary teeth are largest; loreal shield is available, which is a little longer than high; length of the internasals and prefrontal is almost

equal; in most cases the frontal touch the preocular; preocular 1; postocular 2; supralabials are 8-9, fourth to sixth touch the eye; in most snakes anterior temporals are 2 + 2 or 2 + 3, rarely only 1; body scales in 19 : 19 : 15 rows of mildly keeled scales (outer 2-3 rows are devoid of such keels); in young individuals all the scales are smooth; ventral shields, 191-209 and with a strong lateral keel; subcaudals 91-111, paired; anal shield is 1. Hemipenis extends upto the 9th caudal plate, the calyces are deeply scalloped with spinous points; the spinose area is short and the spines are not fleshy; the proximal plicate area is long.

*Distribution* : India : Assam, Meghalaya (Khasi & Garo Hills); Arunachal Pradesh; West Bengal, (Darjeeling district) and Andaman islands.

*Elsewhere* : Myanmar (Upper Burma); Malaya Peninsula, Tong-Kong; Yunnan.

*Habits and habitat* : It is an arboreal snake, exhibiting a remarkable camouflaging mimiery as its green colour helps it merging with the green colour of the foliage.

*Status* : Available in all the hilly areas of its range, but is nowhere common, undeterminate.

#### ASSAM TRINKET SNAKE

##### 80. *Elaphe frenata* (Gray 1853)

1853. *Herpetodryas frenatus* Gray, *Ann. Mag. Nat. Hist.*, (2)**xii** : 390.

1943. *Elaphe frenata*, Smith, *Fauna Brit. Ind.*, **3** : 144.

This snake is quite similar to *Elaphe prasina* but differs in the following characters : Snout is more prominently projecting; the length of internasal shields is almost half of the length of the prefrontals; in certain individuals the nasal shields are united to form a single large shield, 8 or 9 supralabials; prefrontal and loreal shields are united. Its other characters can be summarised as Scales in 19 rows; ventrals 201-235; caudals 120-145, paired, anal 2; 8 or 9 upper labials; loreal united with the prefrontal. Uniform green above with a black streak along the side of the head above the labials (young not green).

*Total Length* : 1500 mm.; tail 465 mm.

*Distribution* : India : Khasi Hills, Meghalaya; Tong-King. China.

*Status* : A rare snake.

#### COPPER-HEAD SNAKE

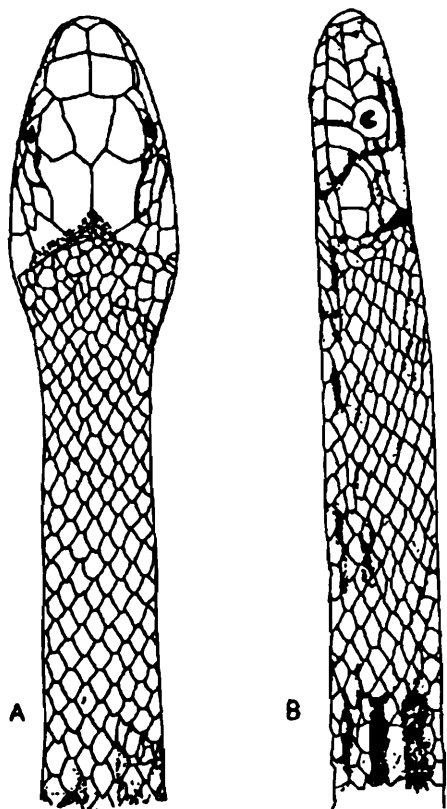
##### 81. *Elaphe radiata* (Schlegel 1837)

(Text figs. 66, 67, 68 & 101B)

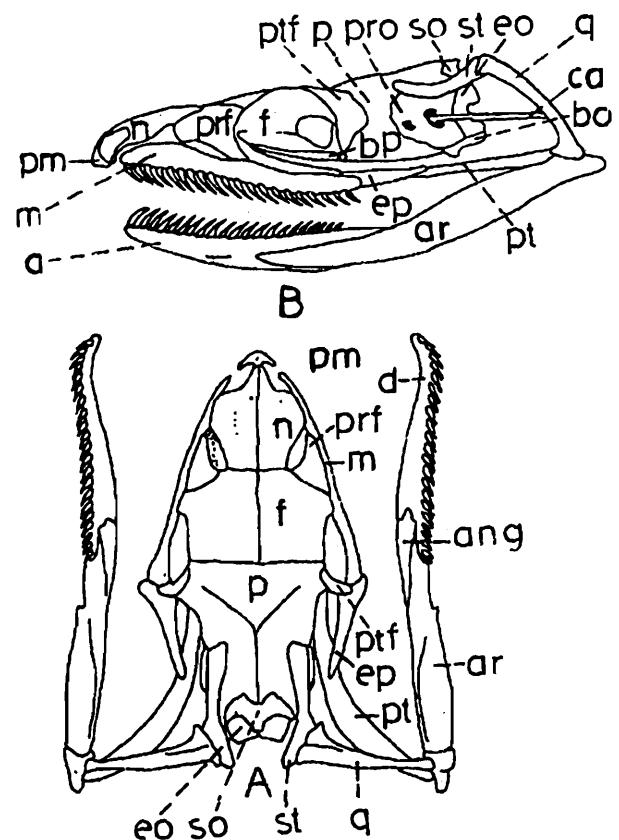
1837. *Coluber radiatus* Schlegel, *Phys. Serp.*, **II** : 135, pl. V. figs. 5 and 6 (Java; Leiden).

1943. *Elaphe radiata*, Smith, *Fauna Brit. Ind.*, **3** : 146.

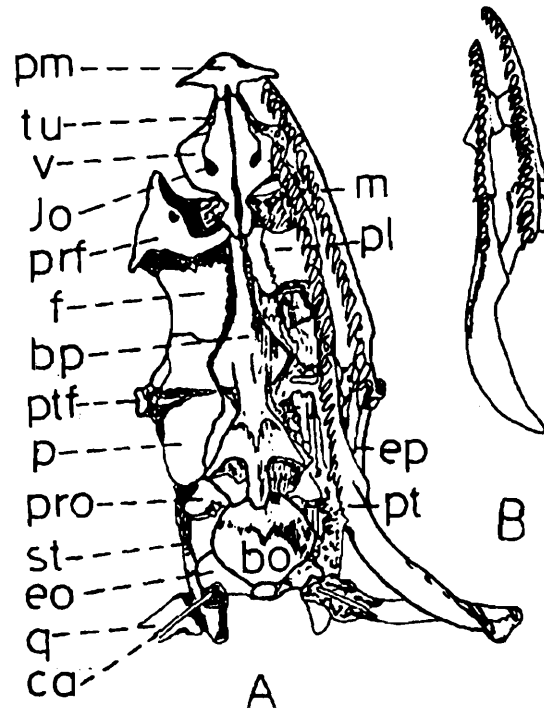
The maximum length of this snake generally reaches upto 1890 mm, tail 400 mm, in males and 1795 mm, tail 350 mm in females (Wall as recorded the length of a male as 2135 mm). Dorsal colouration is reddish brown; greyish-brown, faun or yellowish-brown; with four black stripes in the anterior half or two third of the body, commencing a short distance behind the neck; upper vertebral stripes are comparatively broader; the outer stripes are narrow and are usually broken into a series of elongated spots on the anterior aspect of the body; a black bar across the occiput and three black streaks radiating from below the eye; the juveniles are comparatively bright in colour. The snout is two times longer than the eye; posterior maxillary teeth are largest, loreal distinctly longer than high; preocular 1, postocular 2; temporals 2+3, supralabials 8 or 9, fourth and sixth supralabials touch the eye and sixth one is in contact with the temporal shield; body scales are in 21 or 19 : 19 : 17 rows, more or less distinctly,



**Fig. 66.** *Elaphe radiata* (Schelegel). A. Dorsal pattern of head and body, B. Lateral pattern of head and body.



**Fig. 67.** *Elaphe radiata* (Schelegel). A. Dorsal view of skull, B. Lateral view of skull. ang., angular; ar., articular; bo., basioccipital; bp. basisphenoid; ca., columella auris (or stapes); d., dentary; ep., ectopterygoid (or transpalatine); eo., exoccipital; f., frontal; f.o., foramen for naso-palatine duct leading to Jacobson's organ; n., maxilla; n., nasal; p., parietal; pm., premaxilla; prf., prefrontal; pro., prootic; pt., pterygoid; ptf., post-frontal; q., quadrate; so., supraoccipital; st., supratemporal; tu., turbinal; v., vomer.



**Fig. 68.** *Elaphe radiata*. A. Ventral view of skull, B. Palato-maxillary arch.

keeled; scales of the ischiadic region are strongly keeled; ventrals are 222-250, strongly angulated laterally, subcaudal are paired and 82-108; anal shield is single. Hemipenis extends upto the 10th caudal plate; the calyces are deeply scalloped, with blunt spines; the spinose area extends proximally and joins a short area of small stout spines.

*Distribution* : India : Meghalaya (Khasi, Garo and Jaintia Hills); Assam, Manipur, Eastern Himalayas (Sikkim); Orissa (Cuttack); Bengal.

*Elsewhere* : Myanmar to Southern China and through the whole of Indo-Chinese subregion to the Malayan Archipelago.

*Habits & habitats* : It is a diurnal species frequenting the plains in the open areas and fields also noticed in gardens in the vicinity of villages. The snake is quite pugnacious and fierce and bites readily on mishandling. It possess the power of expanding its body in a vertical direction and if cornered assumes an attacking attitude by opening its mouth widely and throwing the fore-body into a series of loops. The food comprises, mainly the rodents, frogs and small mammals. It is oviparous and lays 5-12 eggs in single clutch.

*Status* : It is a common snake in throughout its range.

## 82. *Elaphe flavolineata* (Schlegel 1837)

1837. *Coluber flavolincata* Schlegel, *Phys. Serp.*, 11 : 14 (Java).

1984. *Elaphe flavolineata*, Mahendra, *Ann. Zool.*, 22 : 282.

The maximum length in males reaches upto 1560 mm, tail 360 mm. Anterior dorsum is pale brown, with a yellow, black-edged vertebral stripe which becomes gradually more and more indistinct towards the hinder part of the body; the dorsal aspect of hinder part of body and tail is dark brown or black; a series of black spots on each side of the anterior part of body, or ocelli with bright yellow centres, which are most distinct in juveniles; a black streak below the eye, an oblique streak from the eye to the angle of the mouth, another from temple to the neck. Snout is two times longer than the eye; posterior maxillary teeth are largest; loreal is slightly longer than high; supralabials are 9, fourth to sixth touch the eye, 6th in contact with the temporal; scales in 21 or 19 : 19 : 17 rows, more or less distinctly keeled those of the ischiadic region are strongly keeled; ventrals, 193-234, strongly angulated laterally; subcaudal, 89-115; anal is 1. Hemipenis extends upto the 14th caudal plate; calyculate area occupies more than half the organ; distally the calyces are small and uniform in size; they gradually become larger and more elongate as they approach the spinose area; this later is relatively short, and the spines are few in number, they terminate in a series of small spines.

*Distribution* : Malaysia, Indo-chinese region (Tennasserim); Andaman islands in India.

*Habits and habitat* : Oviparous (eggs are 50 × 20 mm. in size).

*Status* : A common snake in Malaysia.

### 83. TRINKET SNAKE *Elaphe helena* (Daudin 1803)

1796. *Russell, Ind. Serp.*, 1 : 37, pl. 32 (Vizagapatam).

1943. *Elaphe helena*, Smith, *Fauna Brit. Ind.*, 3 : 149.

This trinket snake never exceeds 1700 mm in length (males are comparatively shorter). Body elongated and compressed slightly on the lateral aspects; snout long, head is quite distinct from the neck; tail is long; snout two times longer than the eye; prefrontal shields are almost two times longer than the internasal shields; length of the loreal scale is slightly longer than its vertical height; supralabials are 8-11, fifth and sixth or fifth to seventh, touch the eye, the sixth or seventh touch the temporal shields (last supralabial is very large); preocular is one; postocular two; temporals 2+2 or 2+3 or 1+2; loreal one; body scales are keeled on the posterior portion of body and tail, in 23 or 25 : 25 or 27 (25 : 29 in many individuals) : 21 or 19 rows ; ventral shields are 217-265, laterally angulated; caudal scales 73-100; anal not divided; hemipenis extends upto the 27th caudal plate; the distal half of the organ is with spines, which are relatively small and arranged in longitudinal series; the next area (distally) to it is with large spines; a series of 6-8 hemipenial spines are present laterally and the largest ones are present on the either side of the sulcus. Dorsal coloration is from light to dark-brown, with brown or black crossbars having the white ocelli. This

colour pattern is present only on the anterior portion, which is brown above and with two broad dark stripes on the lateral aspects; a black vertical streak is present below the eye and an oblique one behind it; ventrum is yellowish uniformly or with distinct margins in certain individuals on the belly.

*Distribution* : India : Gujarat : Bharuch, Bhavnagar, Gandhinagar, Kheda, Vadodara and Dangs district. Complete penninsula, Himalayas (Almora and Jalpaguri districts), Assam and Nagaland.

*Elsewhere* : Sri Lanka and Pakistan (Sind).

*Habits and habitat* : It is extremely agile and pugnacious nocturnal snake, inhabiting the crevices in rocks, termite hills, hollows in trees, dense bushes, old vacant buildings and remote places. Its food comprises the small mammals, birds, lizards, snakes and amphibians. It lays eggs in June.

*Status* : It is available in sufficient numbers, through its range.

### STRIPED RACER

#### 84. *Elaphe taeniura* (Cope 1861)

1861. *Elaphis taeciurus* Cope, *Proc. Adca., Nat. Sci., Philad.*, 12 : 565 (Ningpo and Siam).

1943. *Elaphe taeniura*, Smith, *Fauna Brit. Ind.*, 3 : 150.

The total length reaches upto 1600 mm, tail 300 mm, in males and 1980 mm, tail 340 mm in females. Dorsal colouration is greyish brown or olive; the head and neck uniformly coloured except that a black stripe is present on each side of the head which passes through the eye, anterior half of the back with black transverse lines or network of lines; posterior part is with a pale vertebral line wedged between the two broad black stripes. Ventrums are yellowish on the anterior half but greyish on the remaining posterior portion; a prominent black stripe along each lateral aspect of the posterior part of the belly and tail which is separated from the upper lateral stripe by a whitish line. Snout two and a half times as long as the eye; anterior maxillary teeth are largest; prefrontals are almost two times longer than the internasals; loreal shield is available; supralabials 7-9, 2 or 3 (sometimes only one) touch the eye; a presubocular is generally present, body scales in 23 : 23 : 19 or 17 rows or in 25 : 25 : 19 rows, smooth or feebly keeled; ventrals 230-263, strongly angulate laterally. The number of ventral and subcaudal shields is most variable : North of lat. 20° i.e. Indo-Chinese region—Ventrals 230-263; subcaudals 89-112; Thailand - Ventrals 276-293; subcaudals 91-103; anals are 2 in all the examples. Hemipenis extends upto the 15th caudal plate, the calyculate area occupies nearly half the organ; the spines are short and are enclosed in a voluminous sheath; these are abruptly transformed proximally into an area of longitudinally plicate folds.

*Distribution* : India : Assam, West Bengal (Darjeeling).

*Elsewhere* : Myanmar (Abar Country, Rong - to valley north to Rima, Pangnamdim, north to Fort Hertz, Chin Hills, Pakkoku district, Tenasserim (Sukli); Tong-king; Hong-Kong; Thailand (Muang Fang in the north. Hinlap in the Dong Rek. Mountains); Malayan Peninsula (Variety ridleye from the Batu caves).

*Habits and habitats* : Almost same like *Elaphe radiata*. Variety ridley has been reported feeding on bats in Batu caves).

*Status* : A common snake, throughout its range.

### OLIVE-BROWN RACER, HIMALAYAN TRINKET SNAKE

#### 85. *Elaphe hodgsoni* (Gunther 1860)

1860. *Spilotes hodgsonii* Gunther, *P.Z.S.*, : 156.

1943. *Elaphe hodgsoni*, Smith, *Fauna of Brit. Ind.*, 3 : 152.

The maximum length of this snake is about 1500 mm, tail 310 mm in males and 1250 mm, tail 255 mm in females; dorsal colouration is olive-brown, many scales edged with black; ventrum is yellowish, outer margins of the ventral shields edged with black. Snout two and a half times as long as the eye; anterior maxillary teeth are largest; prefrontal shields are almost two times longer than the internasal shields; loreal shield is present which is a little longer than high; a presubocular shield is present and is generally united with the third labial; supralabials are 8 in number, 4th and 5th touch the eye; body scales in 21 or 23 : 23 : 17 smooth or feebly keeled rows; ventral 229 - 247; angulated laterally; subcaudals 79-92, paired; anals are 2; hemipenis is like that of *Elaphe taeniura* except that it extends upto the 13th caudal plate.

*Distribution* : India : Meghalaya (Garo Hills) ; Himalayas from Ladak and Kashmir (Srinagar) to Sikkim.

*Status* : No where common, rare in many localities of its range.

### BLACK-SPOTTED GRAY RACER

#### 86. *Elaphe cantoris* (Boulenger 1894)

1894. *Coluber cantoris* Boulenger, *Cat. Sn. Brit. Mus.* ii, : 35.

1943. *Elaphe cantoris* (Boulenger) Smith, *Fauna Brit. Ind.*, 3 : 152.

The maximum length reaches to 1960 mm tail 335 mm, in males and no records are available of females. Dorsal colouration on the anterior half of body is grey, the interstitial skin and margins of the scales white and with large squarish black spots, the vertebral series usually united to form broad transverse bars, which are distinct posteriorly, lower parts yellowish, pink on the tail, spotted with grey. Snout is twice to two and a half times as long as the eye; loreal is available, a little longer than high; supralabials are 8, fourth and fifth or 3rd to 5th touch the eye; body scales in 19 or

21 : 21 : 17 smooth or feebly keeled rows; Ventrals 213-236, angulated laterally; subcaudals 65-68, paired; anal is 1; a presubocular shield is generally present; preocular 1; postocular are 2; temporals 2 + 2 or 2 + 3. Hemipenis is like that of *Elaphe radiata* except that it extends upto 17th caudal plate and the calyculate area is more extensive.

*Distribution* : India : Eastern Himalayas (Sikkim, Darjeeling district); Meghalaya (Garo and Khasi Hills); Arunachal Pradesh, West Bengal.

*Elsewhere* : Myanmar (Upper part i.e. Pangnamdim, north of the Triangle).

### REDDISH-BROWN RACER

#### 87 *Elaphe porphyracea* (Cantor 1839)

(Text fig. 69)

1939. *Coluber porphyracea* Cantor, *P.Z.S.*, : 51 (Mishmi Hills, Abor country; col. sketch in Bodleian Library).

1943. *Elaphe porphyracea*, Smith, *Fauna Brit. Ind.*, 3 : 154.

The maximum length of this snake reaches to 900 mm tail 140 mm in males and 1100 mm tail 175 mm in females. Dorsal coluration is reddish brown with dark brown, black edged cross bars. In the young they are entirely black; 2 black dorsolateral lines on the posterior part of the body and tail; a black stripe down the middle of the head and another on each side usually connecting with the first transverse mark on the neck; lower parts uniform yellow. Snout is two and a half times longer than eye; anterior maxillary teeth are largest, loreal a little longer than high; supralabials are 8, fourth and fifth touch the eye; body scales in 19 : 19 : 15 smooth rows, ventrals 190-218, not angulated laterally; subcaudals 52-76, paired, anals are 2; preocular 1; postocular 2; temporals 1 + 2. Hemipenis reaches to the 8th caudal plate; it is spinous completely; spines increase in size gradually and become most prominent and large at

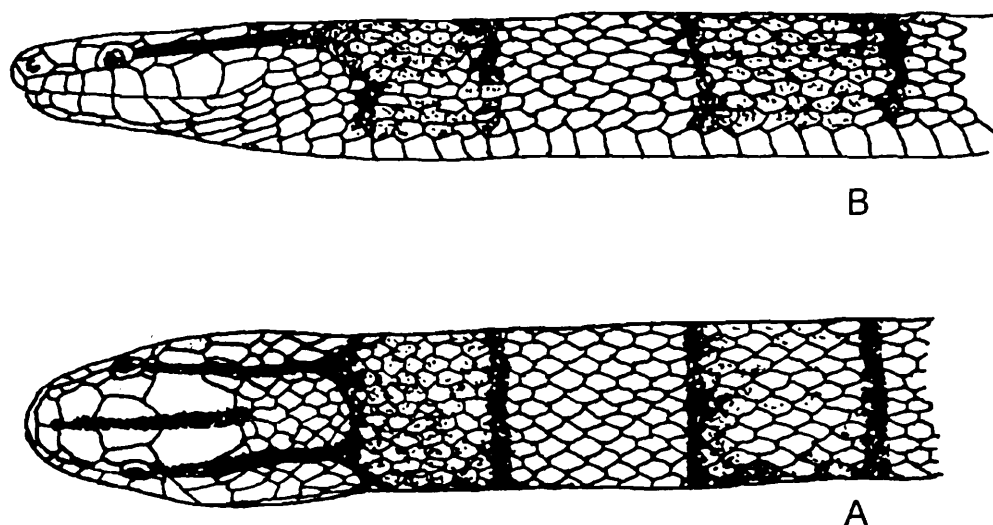


Fig. 69. *Elaphe porphyracea* (Cantor). A. Dorsal pattern of head and neck, B. Lateral pattern of head and neck.

the base of the organ; on the either side of the sulcus these spines are differentiated into two prominent folds.

*Distribution* : India, Meghalaya (Garo and Khasi Hills); Assam; Sikkim, West Bengal (Darjeeling district).

*Elsewhere* : Myanmar (Nam-Tamil Valley north of Fort Hertz, Mogok, Toungyi, Chin Hills); China (W. China); Yunnan; Thailand (Northern part, Doi Sutip and Doi Ang-ka); Malaya Peninsula; Sumatra.

*Status* : Available in sufficient number in throughout its range.

### 88. *Elaphe leonardi* (Wall 1921)

1921. *Coluber leonardi* Wall, *J. Bombay N.H.S.*, **28** : 43, pl. and correction slip (Sinbum Kaba, Upper Burma; London), and **29** : 467, 621, 1923.

1943. *Elaphe leonardi*, Smith, *Fauna Brit. Ind.*, **3** : 156.

The maximum length of this Burmese snake hardly exceeds 800 mm, tail 125 mm in males and no records are available for females. Dorsal colour is olive brown, the scales edged with black and with a series of large, buff, black-edged cross bars or transversely placed spots; they are irregular in outline and are more or less unite with smaller but similarly coloured spots on sides of the body; ventrum is yellowish with large black spots; head light brown or buff in the young darker in the adult, with a large elongated, black, V-or U-shaped mark on the vertex starting on the prefrontal shields, its apex at the nape; a dark vertical stripe below the eye; another behind it and two more that pass backwards from the eye and unite with the markings on the neck. Snout is two times longer than the eye; anterior maxillary teeth are largest; loreal is not present; the preocular is in contact with the posterior nasal supralabials are 7, third and fourth touch the eye; anterior temporals are 1 or 3; body scales are in 19 : 19 : 17 smooth rows of scales; Ventrals 201-226, feebly angulated laterally, subcaudals are 53-60; anals are 2. Hemipenis extends upto the 10th caudal plate; the extreme tip of the penis is calyculate, the rest of the organ bears spines arranged in more or less distinct longitudinal series; distally these hemipenal spines are quite small but increase gradually in size proximally, where they are few in number but very large in size.

*Distribution* : Myanmar : Upper parts (Patsarlamdan, long. 98° .10", lat. 27°38"; Sinlun kaba, Kachin Hills, Kambaite.

*Status* : A rare snake, only 6 specimens are known.

### 89. *Elaphe mandarina* (Cantor 1840)

1840. *Coluber mandarina* Cantor. *Zool. Chusan* : 483, pl. 12, and *Ann. Mag. Nat. Hist.*, **9**; 483, 1842 (Chusan I; London).

1943. *Elaphe mandarina*, Smith, *Fauna Brit. Ind.*, **3** : 157.

The maximum length in male snakes reaches upto 1600 mm, tail 300 mm, but no records are available for females. Dorsal colour is light-brown or greyish with a series of large, oval or rounded yellow spots, broadly edged with black; there are 29-30 on the body on the specimens from Upper Myanmar but less 22-25 in the specimens from Tong-King; on the tail the central parts of the spots generally disappear and are replaced by black annuli; Ventrals are yellowish with large black quadrangular spots which write or alternate with one another; dorsal aspect of head is with black markings, namely a band across the snout, a crescentic mark on the top of the head passing through the eye where it divides into two, and a V-shaped mark, its apex on the frontal shield and passing back on the side of the head behind the mouth to the throat. Snout two times longer than the eye; loreal is absent, if present it is very small and united with the prefrontal; supralabials are 7, third and fourth touch the eye; anterior temporals are 1 or 2; body scales in 23 : 23 or 21 : 19 or 17 smooth rows of scales; Ventrals 210-240, feebly angulated laterally; subcaudals 62-80; anals are 2. Hemipenis extends upto the 14th caudal plate; the calyculate area occupies about half the organ, the cups being deeply scalloped; this area merges gradually with the spinose area; the basal spines are few in number but are very large; at the extreme tip of the organ are two small recesses one of which is occupied by a papilla-like process similar to that which is found in *Elaphe poryphyracea*.

*Distribution* : Myanmar (Upper parts like Abor country; Nam-Tamai Valeey); Tong-King (Fan-Si-Pan Mts., Coldes Nuages); Southern China.

*Status* : Available but not in abundance.

#### Genus 19 *Gonyosoma* Wagler, 1828

1828. Wagler, text to pl. 9 (type species, by monotypy. *G. viride* Wagler = *Coluber oxycephalus* Boie, 1827).

1984. *Gonyosoma*, Mahendra, *Ann. Zool.*, **22** : 274.

Body strongly compressed. Maxillary teeth 21 to 23, the anterior largest. Snout remarkably elongate, strongly projecting, nearly three times as long as the eye. Nostril large, between two nasals. Loreal elongate, 2 to 3 times as long as high. Supralabials 7 to 11, the 5th and 6th or 6th and 7th touching the eye. Costal scales smooth or feebly keeled, with elongate apical pits in 23 or 25 (rarely 27) rows at mid-body; showing several paravertebral reductions. Ventrals strongly angulate laterally, subcaudals paired. Anals 2.

Hemipenis with a patch of elongate spines opposite sulcus and proximal to a short spinulate calyculate area; squamosal shorter than quadrate and having an external tubercle; palatine with median process shorter than lateral one; haemal keel of midthoracic vertebrae extending posteriorly over neck of condylus (Dowling, 1958, p. 38).

Gonyosoma was formerly regarded as a synonym of *Elaphe*, but Dowling (1958, pp. 29-40), by a detailed study of the genotypes of the two genera, has conclusively established its separate generic status.

A single species.

#### RED-TAILED RACER

#### 90. *Gonyosoma oxycephalum* (Boie 1827)

1827. *Coluber oxycephalus* Boie *Isis* : 537 (Java : type lost).

1958. *Gonyosoma oxycephalum*, Dowling, *Copeia*, 1 : 29-40.

1984. *Gonyosoma oxycephalum*, Mahendra, *Ann. Zool.*, 22 : 274-275.

The total recorded length of this large snake is 1880 mm, tail 480 mm in males and 2100 mm, tail 500 mm in females. Dorsal colour is green, which becomes more denser on the head; tail is light chestnut or buff-red; both the colours meet at the vent; in many, on the anterior half of the body the scales are having black edges; an indistinct blackish stripe is present along the side of the head immediately above the labials; ventrum is light greenish with a yellowish tinge. Snout of this snake is strongly projecting, almost 3 times as long as the eye; anterior maxillary teeth are largest; body is strongly compressed; loreal 2 to 3 times as long as high; supralabials are 9 or 10, 5th and 6th or 6th and 7th touch the eye; anterior genials much longer and larger - 3 or 4 times than the posterior; body scales in 23-25 : 23-25 : 15 rows of smooth or feebly keeled scales; ventral shields are 236-262, strongly angulate laterally; subcaudals 130-149; anals 2, most of the vertebral scales in the posterior part of the body are enlarged in most individuals. Hemipenis extends upto the 21st caudal plate; the calyces are large and thick-walled but not deeply scalloped; spines are very large and few in number; proximally there is a short area of much smaller and more numerous spines.

*Distribution* : India : Andaman and Nicobar Islands.

*Elsewhere* : Myanmar (Tenasserim, Amherst district), Thailand (Kanburi, Raheng district; Chieng-Sen in the extreme North); Cambodia; Cochin China. South Anam (Daban); Malaya Peninsula and Indonesian islands.

*Habits and habitat* : An arboreal, extremely active and most pugnacious species.

*Status* : Quite common in many localities of its range.

#### Genus 20 *Ptyas* Fitzinger 1843

1843. *Ptyas* Fitzinger, *Syst. rept.*, : 26 (type *Coluber blumenbachii*).

1943. *Ptyas*, Smith, *Fauna Brit. Ind.*, 3 : 158.

1966. *Ptyas*, Minton, *Bull. Amer. Mus. Hist.*, 134 : 127.

This genus comprises long, quite slender and most agile snakes with 20-28 maxillary teeth; 2-3 loreals and 15-18 scales at the middle of the body. The genus includes two species, which has got a wide range of distribution in Southern Asia.

### Key to the species of Genus *Ptyas*

- Scales in 17 or 16 rows at mid-body ..... *Ptyas mucosus*  
 Scales in 15 rows at mid-body ..... *Ptyas korros*

### DHAMAN, INDIAN RAT SNAKE

#### 91. *Ptyas mucosus* (Linnaeus 1758)

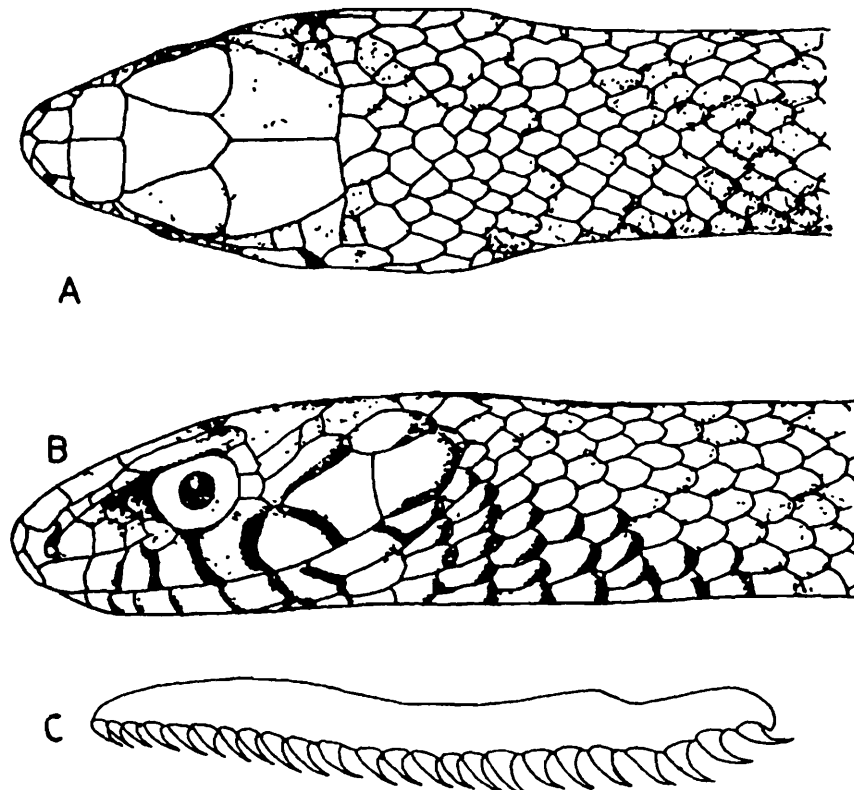
(Text fig. 70)

1758. *Coluber mucosus* Linnaeus, *Mus. Ad. Frid.*, 1 : 37.

1943. *Ptyas mucosus*, Smith, *Fauna Brit. Ind.*, 3 : 159.

1966. *Ptyas mucosus*, Minton, *Bull. Amer. Mus. Nat. Hist.*, 134 : 127-128.

Body is slender, cylindrical, tapering with a long head which is quite distinct from the neck; total body length reaches upto 2800 mm in males and 2300 mm in females; snout obtusely pointed; width of rostral shield is less than its height; nostril is situated between the nasals and first supralabial; loreals are 2, 3 or 4; preoculars are two, upper one is almost four times larger than the lower; postoculars are two or three;



**Fig. 70.** *Ptyas mucosus* (Linnaeus). A. Dorsal pattern of head and neck, B. Lateral pattern of head and neck, C. Maxillary bone.

2 anterior temporals; 2 posterior temporals; supralabials are 8, fourth and fifth touching the eye; infralabials are 9 or 10; two anterior and two posterior chin shields are present, posterior are in contact anteriorly, comparatively longer than the anterior chin shields; body scales in' 10 or 20 or 21 (at neck) : 16 or 17 (at middle of body) : 14 or 15 at tail just anterior to vent; all scales with a pair of apical pits; scales on the anterior portion of body are smooth; posterodorsal scales of the body are feebly keeled; ventral shields are 190-213; subcaudal shields 100-146; anal shields are two; hemipenis extends to the 10th, 11th or 12th caudal plate, not forked, distal one-third is flounced, the fold at the tip are much finer than which are available downwards, this part is followed by the area where the flounces are with much thickened walls and joined together in part to form calyces; this thicker walled area is followed abruptly by aspine-bearing zone, the spines are thick and fleshy and terminate into a spicule; the hemipenial spines are 11 or 12 in a lateral series; at the base of the hemipenis there are two very large spines; the distal one half or one-third of the organ is incompletely divided into two parts by the invaginations of the external wall of the organ (the intimate connection between both the parts is effected by a connective tissue) are firmly united with the sulcus. Dorsal colouration is olive green, brown, yellowish, grey, dull tan, dark olive brown, many posterior scales are with black tips and edges, other anterior scales are with yellow or light tan edges; labials and in many individual other lateral head shields are markedly edged with black; top of the head is devoid of the spots; ventrum is creamish or turbid white, free edges of the ventrals and subcaudals are blackish. In juveniles these markings are more conspicuous.

*Distribution* : India : Gujarat : Rajkot, Jamnagar, Vadodara, Gandhinagar, Bhavnagar, Bharuch, Panchmahals, Sabarkantha, Dangs and Kachchha districts. Whole of India and Andaman islands.

*Elsewhere* : South China; Vietnam, Iran; Southern Afghanistan to Transcaspia; Sri Lanka; Java; Sumatra; Malaysia; Taiwan and Pakistan.

*Habits and habitat* : This is most active, diurnal snake, is available in varied habitats like plains, agricultural fields, grasslands, trees and hollows in them under dead wooden logs, under stones, crevices in rocks, old inhabited houses. Its food comprises small mammals, birds, reptiles, eggs of the birds and amphibians. The breeding season starts in April which extends upto September.

*Status* : It is a common snake throughout its range but is subject to the commercial exploitation on account of its large scale killing for skin.

#### INDO-CHINESE RAT SNAKE

#### 92. *Ptyas korros* (Schlegel, 1837)

1837. *Coluber korros* Schlegel *Phys. Serp.* ii, : 139 and *Abbild Amphib.* 1840 : 99, pls. 27-28, figs. 1-6 (Java; Leiden).

1943. *Ptyas korros*, Smith, *Fauna Brit. Ind.*, 3 : 162.

The maximum length of this rat snake reaches upto 2000 mm, tail 680 mm in males and 1435 mm, 475 mm, tail in females. Anterior dorsum is obivaceous green and it is browinish in the posterior portion, the scales on the posterior portion of the body are with black edges or tips; ventrum is yellowish-white in many individuals outer margins of the ventrals and caudals are edged with black. The juveniles are olive-green with narrow white, yellow or pearl-coloured cross-bars formed by a series of spots. In some snakes the scales on the posterior portion of body are edged laterally with white, these markings form pale longitudinal lines. Maxillary teeth are 23-28; body scales in 15 : 15 rarely 13 : 11 smooth rows; ventrals 160-187; subcaudals 120-147; anals are 2. Hemipenis extends upto the 10th-12th caudal plate; the distal half of the organ is calyculate, the cups bring feebly serrated and longer than broad; towards the basal end they are larger and much more thickly walled; this area passes abruptly into a spinous area where the spines are thick, fleshy and ending in a spicule; there are 6 or 7 lateral series; at the base are two much larger spines; the sulcus lips are involved in the calyces.

*Distribution* : India : Meghalaya (Garo Hills); Assam as far north as the Mishmi Hills.

*Elsewhere* : Myanmar (upto lat. 28° in upper Myanmar); Southern China; Yunnan, Hainan; Malaysia. The species is farely distributed in the Indo-Chinese region east of the longitude 92°

*Habits and habitats* : Except its strong arboreal habits it is like mucosus in its choice of food and disposition. It prefers to live in bushes or on low-trees instead of ground.

*Status* : Subject to the commercial exploitation on account of its large scale killing by man for skin and flesh.

#### Genus 21. *Zaocys* Cope 1860

1860. Cope, *Pr. Acad. Sci., Philad.*, : 563 (type *Coluber dhumnades*).

1943. *Zaocys*, Smith, *Fauna Brit. Ind.*, 3 : 163.

Maxillary teeth 20 to 33, increasing slightly in size posteriorly. Head elongate distinct from the neck. Body elongate, compressed. Eye large, with round pupil. Scales smooth or more or less distincly keeled, with apical pits, in 16 or 14 rows at mid-body. Ventrals rounded. Subcaudals paired. The genus is distributed in Indo-China, China, Malay Peninsula and Archipelago and Philipppines.

#### Key to species of the Genus *Zaocys*

Loreals 2-4; Scales in 12 rows at two head-lengths before vent; sub-caudals 110-118 ..... *Zaocys carinatus*.

Loreals 1; Scales in 14 rows at two head-lengths before vent; sub-caudals 120-142 ..... *Zaocys nigromarginatus*.

## OLIVE-BROWN RACER

93. *Zaocys carinatus* (Gunther 1858)

1864. *Zaocys carinatus* Gunther, *Rept. Brit. Ind.*, : 256.

1943. *Zaocys carinatus*, Smith, *Fauna Brit. Ind.*, 3 : 164.

The species is the largest of all the Asiatic Colubrids. Male 3020 mm, tail 730 mm.

Loreals 2-4, supralabials 8-10. Scales in 18 or 16 : 16 or 14 : 12 rows. Ventrals 208-215. Subcaudals 110-118. Anals 2; Maxillary teeth 22-26. Hemipenis : It extends upto the 15th caudal plate, not forked; two longitudinal fissures divide the organ in two parts, which are united to each other by connective tissue along which the sulcus spermaticus is conveyed. On cutting it to the hemipenis, the sulcus is exposed in the middle, with the folds on each side. These are sponge-like in form, but on close examination are found to be composed of closely set flounces, transversely arranged; distally they form smooth longitudinal folds which converge and meet at the tip; proximally they are united and form large, thick-walled calyces; the basal one-third has coarse spines, 2 or 3 at the extreme base being very large.

Two color varieties.

*Zaocys carinatus carinatus* Gunther

1864. *Zaocys carinatus* Gunther. *Rept. Brit. Ind.*, : 256.

1984. *Zaocys carinatus carinatus*, Mahendra, *Annals of Zoology*, 22 : 266.

Olive yellowish brown above. Lower parts whitish anteriorly, black and yellow posteriorly. Tail black, each scale with large yellow spot. A series of indistinct yellow cross-bars may be present in the anterior part of the body, and 6 black irregular longitudinal stripes posteriorly, the latter connected together to form a more or less distinct network.

*Distribution* : South Burma, Thailand, Annam, the Malay Peninsula and Archipelago.

*Status* : Common throughout its range.

*Zaocys carinatus tenasserimensis* Sclater

1891. *Zaocys tenasserimensis* Sclater *J.A.S. Bengal*, Lx, : 238, pl. 6.

1984. *Zaocys carinatus tenasserimensis*, Mahendra, *Annals of Zoology*, 22 : 266.

Black above, greenish olive on the head. Anteriorly, with traces of a white vertebral line; in the middle part of the body, series of ill-defined white transverse bands bordered with black posteriorly. On the hinder part of the body the bands are gradually transformed into 7 longitudinal series of white spots separated by a black network.

Below yellowish, the outer edges of the ventrals dusky. Tail with a median dusky streak.

*Distribution* : Myanmar (Tenaserim).

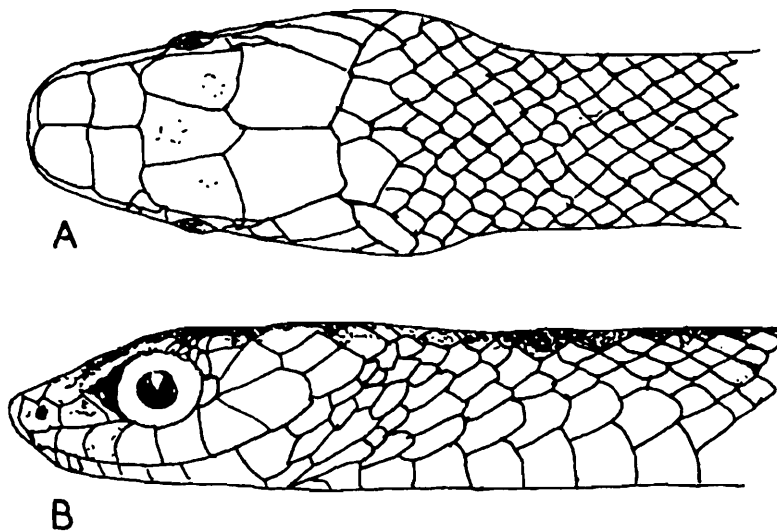
*Status* : Common throughout its range.

**BLACK-STRIPED GREEN RACER**  
**94. *Zaocys nigromarginatus* (Blyth 1854)**  
 (Text fig. 71)

1854. *Coluber nigromarginatus* Blyth *J. A. S. Bengal*, xxiii, : 290. (Vicinity of Darjeeling : Calcutta).

1943. *Zaocys nigromarginatus*, Smith, *Fauna Brit. Ind.*, 3 : 165.

*Total length* : Male 2560 mm, tail 720 mm. Color is green above, the scales edged with black, with 4 broad black, longitudinal stripes, which in the young extend the whole length of the body and tail, but in the adult are confined to the posterior one-third of the body. Lower parts greenish-white. Top of the head brown. Loreal single. Supralabials 8. Scales in 18 or 16 : 16 or 14 : 14 rows. Ventrals 189-209.



**Fig. 71.** *Zaocys nigromarginatus* (Blyth). A. Dorsal pattern of head and neck, B. Lateral pattern of head and neck.

*Distribution* : The Eastern Himalayas, Assam, Upper Burma, Tonk-King, Yunnan and Western China. Found in the hills upto 7000 ft. altitude.

**Genus 22. *Argyrogena* Werner 1924**

1924. *Argyrogena* Werner, *Sitz. Ber. Akad. Wiss. Wien.*, 133 : 51.

1943. *Coluber*, Smith, *Fauna Brit. Ind.*, 3 : 166.

This genus comprises the snakes with elongated, cylindrical body and head quite distinct from the neck. The snout is long and generally project beyond the lower jaw; eyes are distinctly large, with round pupil, maxillary teeth are 13-15, with distinct diastema; scales at the middle of body are smooth, in 19, 21 or 23 rows; ventral shields are enlarged and rounded, many individuals are with a lateral keel; tail is moderately long, subcaudal shield is paired. The range of genus is from Egypt and Israel to Afghanistan, Iran and through Pakistan to India.

### Key to the species of Genus *Argyrogena*

- I. Scales in 19 rows.
  - A. Two labials (5th or 6th) touch the eye. Ventrals 199-211, subcaudals 82-119...  
..... *A. ventromaculatus*
  - B. Two labials (5th or 6th) touch the eyes. Ventrals 202-212, subcaudals 109-121.  
..... *A. bholanathi*
  - C. Two labials (5th or 6th) touch the eye; Ventrals 205-244, subcaudals 110-144  
..... *A. rhodorhachis*
  - D. Only one labial (5th) touch the eye; sixth labial separated from the eye by subocular scales. Ventrals 193-212; subcaudals 85-110. .... *A. karelini*
- II. Scales in 21 or 23 rows.
  - A. 8 supralabials are present; subcaudals 77-92 ..... *A. fasciolatus*
  - B. 9 supralabials are present; subcaudals 118-127; 1 preocular .....  
..... *A. gracilis*
  - C. 9 supralabials are present subcaudals 82-101; 2 preoculars ..... *A. ravergeri*

#### GLOSSY-BELLIED RACER

#### 95. *Argyrogena ventromaculatus*

(Gray & Hardwicke 1833-1834)

1833-1834. *Coluber ventromaculatus* Gray & Hardwicke, III. *Ind. Zool.*, 2 : pl. 80, fig. 1.

1943. *Coluber ventromaculatus*, Smith, *Fauna Brit. Ind.*, 3 : 168..

This snake with slender, cylindrical, tapering body reaches to a maximum length about 1400 mm. in males and about 1300 mm. in females; head is long and narrow but is quite distinct from the neck; height and width of the rostral shield are equal; nostrils are surrounded by the nasals and internasals; preoculars are 2, upper is more than twice larger than the lower; postocular are 1-3 (generally 2 or 3); supralabials are 8 or 9, fifth and sixth touching the eye, infralabials are 9-11, anterior temporals are 2; posterior temporals are 2 or 3; chin shields are distinct, posterior one are large longer and narrower than the anterior ones; body scales are smooth in 19 : 19 : 15

or 13 rows; ventral shields are 195-213, laterally angulated; subcaudals are 82-119; anal shield is divided; hemipenis extends upto the tenth caudal plate, calyculate area covers 1/3 of the organ, the cups are deeply scalloped and covered with uniform spines (about 20 spines in a lateral series). Dorsal colouration is light grayish or reddish brown with a dorsal series of 57-74 black cross bars or rhomboidal spots which are composed of brown or grey scales edged with black and an alternating series of small spots, some of which touch the ventral shields as the age of the snake advances, the markings on the posterior portion fades out. The head is grayish with regular markings of dark-brown colour on the top; in most of the individuals a short vertebral stripe is present, which is quite distinct on neck, ventrum is whitish, with a yellow tinge; dorsal aspect of the tail is gray, plenty of variations are present in the shape, width and deepness of colour in the dorsal bars, they may be narrower or broader than their interspaces. Many snakes are with oblique black stripe or bar below the eye and on temple.

*Distribution* : India : Gujarat, Jamnagar, Rajkot, Junagarh, Surat, Valsad, Dangs and Kachchha districts. Uttar Pradesh (Almora), Rajasthan, Maharashtra.

*Elsewhere* : Pakistan, Uzbekistan, Israel, Iran and Afghanistan.

*Habits and habitat* : It is most agile nocturnal, terrestrial snake found in rocky, sandy and clay habitat with sparse grass and scrub vegetation. Sometimes these snakes climb bushes and trees in the search of birds and their eggs. The main food comprises the small lizards but occasionally the diet is supplemented with birds and small mammals. The breeding season starts in April and continues upto late September, 6-9 eggs are laid in a single clutch.

*Status* : Quite common in throughout its range.

### CLIF RACER

#### 96. *Argyrogena rhodorhachis* (Jan 1865)

1865. *Zamenis rhodorachis* Jan, *De Filippi, Viagg. in Persia*, : 356 (Persia).

1924. *Argyrogena rhodorhachis*, Werner, *Sitz. Ber. Akad. Wiss. Wien cxxxiii*, : 51.

*Total length* : As in *C. ventromaculatus*.

Colour is pale to medium grey, sometimes rather brownish or greenish. Anterior half of the body with short cross bars or alternating spots of grey, chestnut or pale russet; posterior part and tail uniform colored. Head with pale yellowish bars before and behind the eye. Nape without a black vertebral stripe. Belly light coloured, usually with dark grey spots on the tips of the ventrals.

Supralabials 9, the 5th and 6th touching the eye, the 6th in contact with the lower anterior temporal. Scales in 19 : 19 : 13 or 11 rows. Ventrals 205-252. Subcaudals 110-114. Total number of ventrals and subcaudals added together 328-387. Anals 2. Hemipenis is like that of *ventromaculatus*.

*Coluber rhodorachis* closely resembles *C. ventromaculatus* in its appearance, scalation and coloration and integrates with it almost indistinguishably. Consequently, Wall (1923, p. 618) unites these two into one species. Malcolm A. Smith (1943, pp. 168 and 169) and Mertens (1969, p. 61), however, regard them as distinct species. Smith pointed out that the higher ventral count, the greater reduction of scale-rows on the posterior part of the body, and the slight differences in coloration justify their retention as distinct species; while Mertens notes that the number of ventrals and subcaudals added together give a nice distinction between the two species. This number ranges from 309 to 326 in *ventromaculatus*, and from 328 to 387 in *rhodorachis*. Moreover, in *ventromaculatus* there is almost always a longitudinal dark stripe on the nape and a series of dark flecks on the back; whereas *rhodorachis* never has a longitudinal nuchal stripe, possesses small transverse spots standing out faintly against the ground color of the back, and has yellowish-white spot before and behind the eye more conspicuous than that in *ventromaculatus*.

*Distribution* : From Ladak in the Western Himalayas south to western Sind and Westward to Turkmen S.S.R., Syria, Arabia and Somaliland. "It probably occurs throughout West Pakistan exclusive of the Thar Desert and upper Indus basin. It has been taken in mountains to elevations of at least 7000 feet" (Minton 1966, p. 122).

*Status* : Common throughout its range.

### SPOTTED DESERT RACER

#### 97. *Argyrogena karelini* (Brandt 1838)

1838. *Coluber (Tyria) karelini* Brandt, *Bull. Acad. St. Petersb.*, iii, : 243 (S.W. Asia).

1924. *Argyrogene karelini*, Werner, *Sitz. Ber. Acad. Wiss. Wien*, cxxxiii, : 51.

*Total length* : Male 835 mm, tail 225 mm; female 940 mm, tail 230 mm.

Dorsal colour is pale grey to buff whitish or yellowish below. Two types of color patterns are found : (1) Body with black cross-bars, narrower than their interspaces and with lateral vertical spots alternating with the cross-bars and extending on to the outer margins of the ventrals; a black bar or spot below the eye and an oblique one on the temple. (2) With a bright orange vertebral stripe; interstitial skin on the anterior part of the body black.

Supralabials 9, the 5th touching the eye, the 6th prevented by a subocular. Scales in 19 or 21 : 19 : 13 rows; smooth. Ventrals 192-220, angulate laterally. Subcaudals 85-117. Anals 2. Hemipenis : The calyculate area consists of 1/3 of the organ; the cups are very large, much longer than broad and deeply scalloped, with edges with spines; the spines are of uniform size, about 20 in lateral series.

*Remarks* : Mertens (1969, pp. 56-60) has instituted a subspecies, named *Coluber karelini mintonorum* in honor of Sherman A. Minton Jr., its discoverer (Minton, 1966,

pp. 122, 123), which is characterised by a pointed snout, a somewhat projecting rostral, the 5th supralabial usually touching the eye. 227-239 ventrals (instead of 192-220) and 114-123. Subcaudals (instead of 85-117). It occurs in the sandy tracts of the Chagai (Nushki) and Kharan district in West Pakistan, as well as in South-Eastern Iran.

*Distribution* : Transcaspia, Turkestan, Iran, Afghanistan and West Pakistan.

*Status* : Not in abundance but available in throughout its range.

#### BANDED RACER

#### 98. *Argyrogena fasciolatus* (Shaw 1802)

(Text fig. 72)

1802. *Coluber fasciolatus* Shaw, (based on *Russell*, 1769, : 26, pl. 21).

1943. *Coluber fasciolatus*, Smith, *Fauna Brit. Ind.*, 3 : 170.

1983. *Argyrogena fasciolatus* Daniel, *Indian Reptiles*, : 78.

The banded racer is a diurnal snake, reaching to a length of 1350 mm (males are comparatively shorter than the females). The body is elongate, cylindrical, head is short but distinct from the neck, snout projects out a little bit; eyes are large and with round pupil; tail is quite long; rostral large slightly broader than its vertical length,

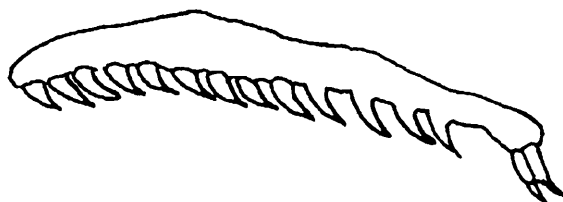


Fig. 72. *Argyrogena fasciolatus* (Shaw). Maxillary bone.

nostril is between the nasal and internasal; preoculars are one or two; postoculars are two; upper labials are 7 or 8, fourth and fifth touching the eye; lower labials are 9 or 10; temporals are, 2 anterior and 2 or 3 posterior; chinshields are distinct, length of anterior and posterior chinshields is almost same but posterior chinshield is quite narrow; body scales are smooth, at the middle of body are 21 or 23, at neck 21 or 23, near the vent 19 or 17 or 15, all the scales are with apical pits; ventral shields are from 185-234, obtusely angulated laterally, subcaudals 75-95; anal shield divided, hemipenis is devoid of spines, distal one third of the penis is compact and with fine denticulations; penis is three folded and distinctly demarcated by a well developed sulcus, a strong distal area and between the two folds are present irregularly shaped and closely set papillae. Dorsal colouration of adult snakes is brown, cinnamon to grayish brown, base of scales are darker. Juveniles are light or dark olive-brown above, with narrow cross-bars on the anterior half of the body; posterior part of body

with faint cross-bars or spots, which gradually disappear towards the tail; tail is of uniform brown, head is beautifully coloured with light and dark olive and two white spots are present on parietal shields on either side of the interparietal suture; ventrum is whitish or yellowish.

*Distribution* : India; Gujarat (Bharuch, Bhavnagar, Dangs, Valsad, Panchmahals, Gandhinagar, Mehsana and Sabarkantha districts). West Bengal, Himalayan foot hills, South of Nepal, Maharashtra, Karnataka, Madhya Pradesh and many other parts of Peninsular India.

*Elsewhere* : Sri Lanka and Pakistan (Larkana district).

*Habits and habitat* : It is quite a secretive pugnacious burrowing snake inhabiting arid or semiarid areas, with loose soil and slight grass and other vegetation; it is also available in agriculture fields. It bites savagely on mishandling and erects itself and flattens the body behind the neck like a Cobra. Its food mainly comprises the small rodents, lizards and the victim is constricted.

*Status* : It is a common snake in many parts of its range.

#### WHITE-SPOTTED BROWN RACER

##### 99. *Argyrogena gracilis* (Gunther 1862)

1862. *Zamenis gracllis* Gunther, *Ann. Mag. Nat. Hist.*, (3) ix, p. 125 and *Rept. Brit. Ind.*, 1864, p. 254, pl. xxi, fig. 4 (Sind : London).

1943. *Coluber graciles*, Smith, *Fauna Brit. Ind.*, 3 : 171.

"Total length in female 930 mm, tail 270 mm. Colour is light greyish-brown above, with narrow white, black-edged cross-bars, which expand on the outer sides of the body and connect more or less completely with those in front and behind, thus enclosing circular or oval spots; these markings become less distinct on the hinder part of the body and tail, where they are replaced by short, narrow, black cross-bars or spots; head above with white, black-edged markings, namely a bar across the snout in front of the eye and two A-shaped marks behind, one on the vertex, the other on the nape; lower parts whitish or yellowish; the outer margins of the ventrals with black spots" (Malcolm A. Smith, 1943, p. 172). Supralabials 9, the 5th and 6th touching the eye. Scales in 21 : 21 : 15 rows. Ventrals 206-222. Subcaudals 118-127. Anals 2, hemipenis not known. Maxillary teeth 13 or 14, diastema distinct; head very distinct from neck; body is slender snout pointed and projecting rostral as broad as high, projects well on the snout but do not separate the internasals anteriorly; prefrontals not shorter than internasals; temporals 2 + 2.

*Distribution* : Sind, Bombay Presidency (Wall, 1923).

*Status* : A rare snake, few examples are known.

100. *Argyrogena bholanathi* Sharma 1976

1976. *Coluber bholanathi* Sharma, *Comp. Physiol. Eco.*, 1(3) : 105-107.

The maximum length reaches to 1190 mm, tail 307 mm. Anterior dorsal region bears an alternate arrangement of ash coloured oval spots (vertebrals) and narrow white (black spotted) bands. Posteriorly the spots fade out and form a dark brown colouration. Snout dark brown, posterior head region spotted with white and black, a black bar on the complete interorbital region, two black stripes across the whole width of both the parietals, an oblique black stripe from base of the orbit to mouth across sixth and seventh supralabials. All the labials, chin shields and lateral scales of the head bear black spots. The lower parts, yellowish-white; outer margins of the ventral scales spotted with black. Maxillary teeth 13, with distinct diastema, last posterior one slightly longer and much separated from the others. Head moderately large and distinct from the neck. Body long, slender and smooth. Pupil large and round. Rostral shield two times wider than high (6 mm. wide, 3 mm. high), not separating the internasals which are slightly smaller than prefrontals. Temporal scales 2 + 2; supralabials 9, 5th & 6th touching the eye, 6th highest and in contact with anterior lower temporal; infralabials 11, first 5 touch anterior genials, 6th largest. Postocular 2 or 3, preocular 1. Dorsal scales smooth, in 19 : 19 : 15 rows e.g. on neck 19, at middle of body 19 and in front of vent 15 rows. Ventral scales 202-212, prominently angulated laterally, subcaudal scales 109-121 divided and anal-shield divided. Hemipenis short, finger like, devoid of spines and reach upto 6th caudal plate. Testis white, 13 mm. long and 4 mm. wide. Peritoneum yellow with black reticulations.

*Distribution* : India : Andhra Pradesh (Nagarjuna Hill, 16°31'N, 79°14'E, Guntur district).

*Habits & Habitat* : It is a diurnal snake, extremely active and inhabits the rocky area with xerophytic vegetation. The food comprises mainly the geckonid lizards like *Hemidactylus brooki* and small rodents.

*Status* : A rare species. Its original habits is now submerged in Nagarjuna Sagar Dam.

## MOUNTAIN RACER

101. *Argyrogena ravergeri* (Menetries 1832)

1832. *Coluber ravergeri* Menetries, *Cat. Rais. Obj. Zool.*, : 59 (Baku : Leningrad).

1924. *Angyrogena* Werner, *Sitz. Ber. Akad. Wiss. Wien*, cxxxiii, : 51.

*Total length* : Male 1160 mm, tail 285 mm; female 1000 mm, tail 215 mm.

Dorsal color is pale buff or greyish, with a dorsal series of rhomboidal spots or narrow cross-bars, alternating with a series of smaller spots on each side. These spots

are usually confluent on the tail, forming three conspicuous longitudinal streaks. Head with an oblique dark streak below the eye and another from the eye to the angle of the mouth. Belly pale tan to dirty white, uniform or with dark spots.

Supralabials 9, the 5th and 6th or sometimes the 6th and 7th touching the eye. Scales in 21 : 21 : 15 rows. Ventrals 197-234. Subcaudals 82-101. Anals 2. Hemipenis, the distal end has two longitudinal, thick, sponge-like folds, lying on each side of the sulcus, the area upon one side being smooth, on the other calyculate. The spines are relatively short and stout; there are from 15 to 20 in lateral series.

*Distribution* : From Transcaspia and Transcaucasia to Baluchistan and N.W.F. Provinces of Pakistan.

*Status* : A common snake, throughout its range.

### Genus 23. *Sphalerosophis* Jan 1865

1865. *Spalerosophis* Jan, *De Fillipi, Viagg. Persia*, : 356 (type by designation, *microlepis*).

1966. *Sphalerosophis*, Minton, *Bull. Am. Nat. Hist.*, 134 : 124.

Certain larger species of the colubrids like *diadema*, *arenarius* and *microlepis* were assembled by Schmidt (1930) in a revived genus *Sphalerosophis* Jan on the basis of divided prefrontal shields, scale like and small temporals, many loreal plates (2-5) and a single anal shield. Other distinctive characters are : Maxillary teeth are either devoid of diastema or if present it is quite narrow; eyes are separated from the upper labials by a distinct series of suboculars and scales are in 25-43 at the middle of the body. This genus is distributed in the arid areas from North Africa to North Western India and Pakistan.

### Key to the species of Genus *Sphalerosophis*

Scales in 25-33 rows, eye separated from the labials by a series of suboculars.

- A. Rostral shield wider than high a. Ocular ring composed of 7-10 scales; prefrontals 5-8, fragmented; dorsal scales are more strongly keeled in *diadema*; size is comparatively much larger than *diadima*; striking difference in appearance and colour from *diadema*; Pariatals with a or ( ) -shaped mark ..... *S. articeps*
- b. Ocular ring composed of 8-11 scales; prefrontal 8-11, not fragmented dorsal scales weakly keeled; size is comparatively smaller than *articeps*; colour pattern in adults much different it is like the juveniles of *articeps*; parietals are not with a or ( ) shaped mark ..... *S. diadema*
- B. Rostral shield much higher than broad, produced well on to the surface of the snout ..... *S. arenarius*

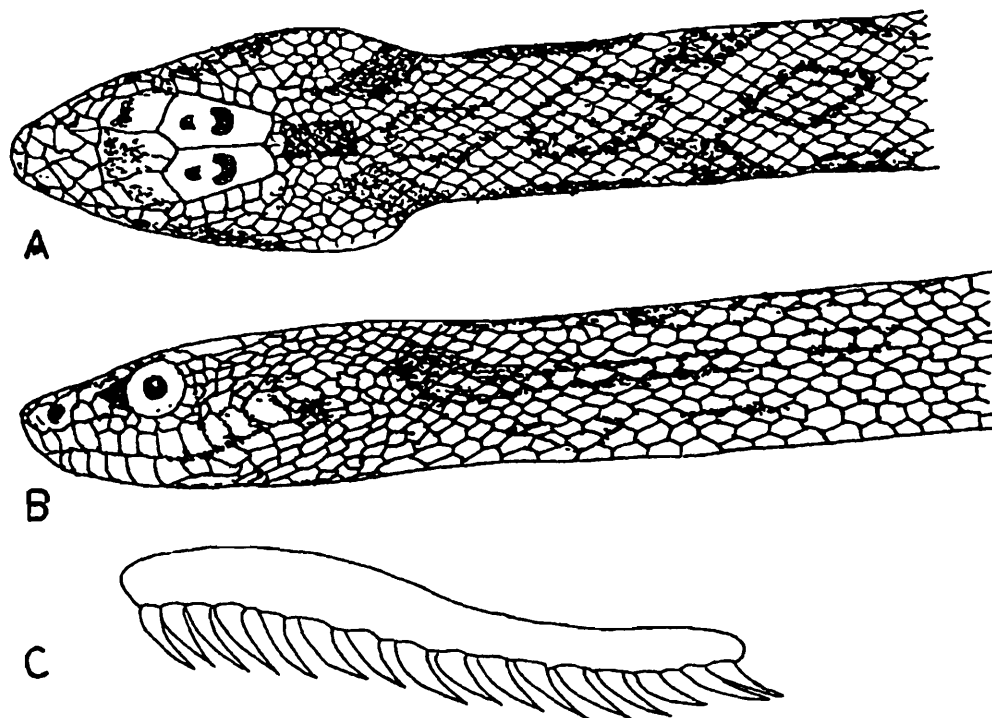
EASTERN DIADEM SNAKE, RAJATBANSI  
102. *Sphalerosophis diadema diadema* Schlegel 1837  
(Text fig. 73)

1837. *Coluber diadema* Schlegel, *Phys Serp.*, 2 : 148 (based on *Russell* 1801 : 34, type loc. Buchier, near Bombay).

1966. *Sphalerosophis diadema diadema*, Minton, *Bull. Am. Mus. Nat. Hist.*, 134 : 126.

This large snake reaches upto a total length of 1975 mm the body is quite long, cylindrical; head distinct from the neck, snout long; tail is quite long; eyes are large with round pupil; maxillary teeth are 16-18, diastema is not distinct, generally absent; rostral is as broad as long or slightly less deep than broad; prefrontals are broken up into numerous small scales, which are generally arranged in two transverse rows; lower labials are 12, sixth is very small, supraoculars are 10; preocular is one, postoculars are 3, subocular shield are arranged in a series, which separates the eye and the upper labials, body scales are obtusely keeled at mid vertebral aspect, in 25-33 rows at middle of the body, outer few rows on both sides are smooth; ventral shields are 216-278; subcaudal shields are 70-118; anal shield not divided. Dorsal colouration is orange pale grey, sandy, buff or dusky pink, ventrum is whitish or pinkish, mottled with darker spots, head is blackish.

*Distribution* : India: Gujarat, Banaskantha, Kachchha and Mehsana districts. North-western India, Jammu and Kashmir, Punjab, Uttar Pradesh, Haryana, Rajasthan and Gujarat as above.



**Fig. 73.** *Sphalerosophis diadema diadema*. Head and neck : A. Dorsal pattern, B. Lateral pattern, C. Maxillary bone.

*Elsewhere* : Pakistan (Sind, Baluchistan); Afghanistan, Iran, Southern Turkestan and Northern Africa.

*Habits and habitat* : This is large, diurnal snake, prefers rocky arid areas, with plenty of crevices in rocks and xerophytic bushes in the surroundings. Its food comprises small mammals (mainly the rodents), lizards, frogs and small birds and their eggs.

*Status* : Common throughout its range.

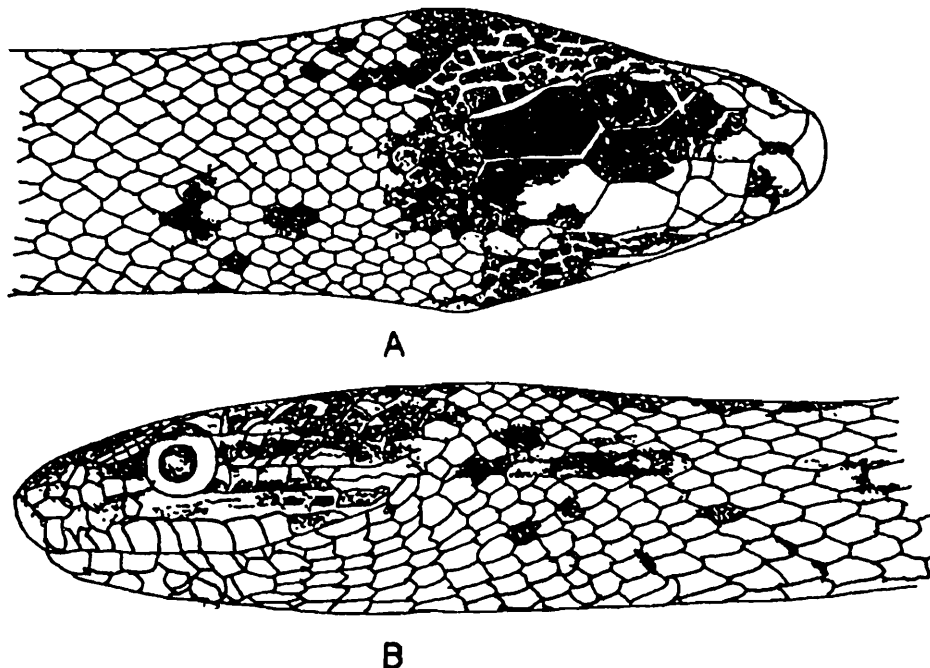
### ROYAL SNAKE

#### 103. *Sphalerosophis atriceps* (Fischer, 1885) (Text fig. 74)

1885. *Zamenis diadema* Var. *atriceps* fischer, *Jahrb, Hamburg Wiss. Anst.*, 2 : 102. (type loc. Himalayas).

1966. *Sphalerosophis atriceps*, Minton, *Bull. Amer. Mus. Nat. Hist.*, 134 : 124-126.

The length of this very large snake reaches upto 1940 mm, tail 403 mm in males and 1614 mm tail 394 mm in females. Dorsal color is formed by irregular, dark-brown or black spots scattered all over, the black color is confined to individual scales or thickened in to large rhomboidal dorsal spots. The head partly or entirely black or with a deep red hue, which becomes deep red on nape and temples; ventrum is pinkish with dark-grey motteling; chin and throat are white. Adult snakes exhibit plenty of variations and individuals with straw, yellow, orange, dusky pink and with extremely variable flecks and blotches on the whole body are available. Head is quite



**Fig. 74.** *Sphaerosophis atriceps* (Fisher). Head and Neck : A. Dorsal pattern, B. Lateral pattern.

long; snout is truncated, with a wide temporal region (it is wider than neck); rostral is higher than wide; nostrils are large and pierced in two distinct nasal shields; loreals are 2; eyes are large and are surrounded by a large supraocular + 7-9 small scales; supralabials are 10-13 infralabials 11-14; posterior chin shields are smaller than the anterior ones; posterior chin shields are not in contact with each other; temporal scales are in the 10-16 fragments; prefrontal shields are divided into 5-8 scales; body with 27-31 rows of strongly keeled scales at mid-body; ventrals 232-254; subcaudals 96-114; anal is 1.

*Distribution* : India : Punjab (Ambala); Uttar Pradesh (Allahabad); Rajasthan (Jodhpur & Pali districts); Gujarat (Kachchha).

*Elsewhere* : Pakistan (Gilget, Western Himalayas, Qutta and Las Bela districts of Baluchistan).

*Habits and habitat* : Inhabit dense scrubby areas and live in burrows, rock crevices, abandon in old buildings (from sea level to 6500 feet); nocturnal, most active, if cornered hiss loudly and bite; mating takes place in March; 68-78 eggs are laid (soft and flabby shelled) in May. The food comprises mice, rats and birds. The victim is killed by pressing it against the floor or the wall.

*Status* : Available in sufficient number but is subject to the commercial exploitation by man for its skin.

#### RED-SPOTTED DIADEM SNAKE

#### 104. *Sphalerosophis arenarius* (Boulenger 1890)

1890. *Zamenis arenarius* Boulenger, *F.B.I.*, : 329 (Karachi and Sind; London).

1966. *Sphalerosophis arenarius*, Minton, *Bull. Amer. Mus. Nat. Hist.*, 134 : 127.

*Total length* : Male 930 mm, tail 175 mm. Color is light gray to buff, with seven rows of alternating reddish spots, the caudal spots tending to fuse into stripes; head pattern similar to that of juvenile.

Lower parts white with high gloss. Maxillary teeth 14, diastema very small. Rostral much higher than broad, extending well on to the upper surface of the snout, separating the internasals for half or more than half their length. Prefrontals broken up into 3 or 4 shields, arranged in a transverse series. Loreals 2, one behind the other. Supralabials 10, scales in 25 : 25 or 27 : 15 or 17 rows, obtusely but distinctly keeled, strongly on the posterior part of the body, ventrals 226-257. Subcaudals 70-86. Anal 1.

*Distribution* : Western Pakistan (Karachi, Las Bela, Sind) Rajasthan.

*Status* : Available in sufficient number but is subject to the enormous pressure and commercial exploitation by man for its skin.

Genus 24. *Opheodrys* Fitzinger 1843

1843. *Opheodrys* Fitzinger, *Syst. Rept.* 26 (type *aestivus*) Schmidt, *Herpetologica*, Chicago, 1, 1936, : 63.

1943. *Opheodrys*, Smith, *Fauna Brit. Ind.*, 3 : 177.

Head is quite distinct from the neck; eyes are large with a round pupil; body elongated, cylindrical; maxillary teeth 18-33, equal or 1 or 2 of the most anterior and posterior may be smaller than the others, nostril is pierced between the two nasals; prefrontals are much larger than the internasals; loreal is small, larger than high, preocular is 1; postoculars are 2 or 3; temporals 1+2; supralabials 8 (rarely 7), 4th and 5th touch the eye; body scales in 15 rows throughout, these may be smooth or keeled and are without apical pits; ventral shields are rounded; tail is long and the subcaudals are paired. The genus is distributed in Indo-Chinese subregion; China, Taiwan, the Riu Kiu islands, North America and includes 10 species. One species is included in the present work.

Key to the species of Genus *Opheodrys*

- I. Ventrals are less than 188. Snout strongly convex in profile, anal entire; colour is uniformly green on dorsal aspect ..... *Opheodrys doriae*
- II. Ventrals 194; anal entire; uniform green above ..... *Opheodrys hamptoni*

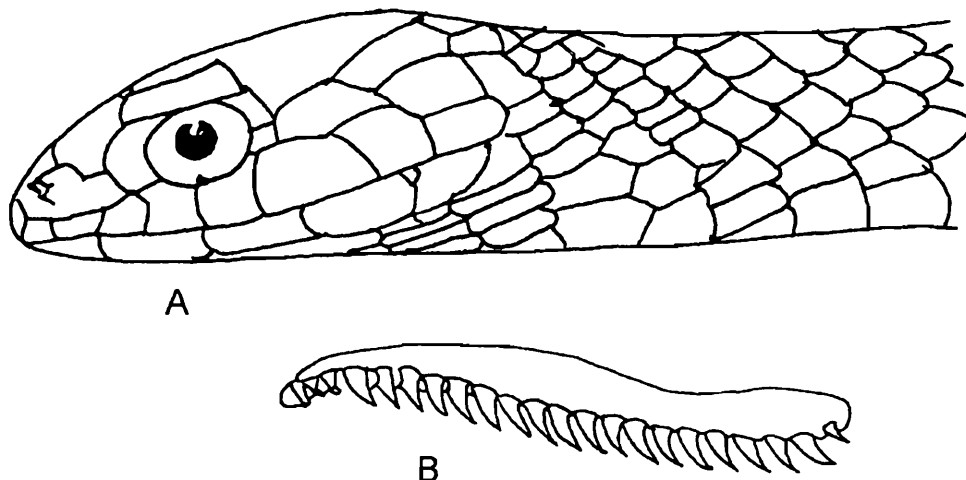
## BURMESE GREEN RACER

105. *Opheodrys hamptoni* (Boulenger 1900)

(Text fig. 75)

1900. *Ablabes hamptoni* Boulenger, *Ann. Nat. Hist.*, (7)vi, : 409 (Mogok, Burma; London).

1943. *Opheodryas hamptoni*, Smith, *Fauna Brit. Ind. Rept.*, 3 : 180.



**Fig. 75.** *Opheodryas hamptoni*. A. Lateral view of head and neck, B. Maxillary bone.

The maximum length reaches upto 1070 mm, tail 220 mm. Dorsal colour is uniformly green, the colour descends on the outer margins of the ventral scales; upper lips and ventrum are whitish. Maxillary teeth are 25, small and equal in size; eye is large, its diameter is greater than its distance from the nostril; snout is pointed, convex in profile, internals truncate anteriorly; nostrils are lateral in position; a presubocular scale is available; anterior genials are two times longer than the posterior genials; body elongate; scales in 15 : 15 : 15 rows, smooth; ventrals, 194; subcaudals, 76; anal is 1.

*Distribution* : Myanmar (Mogok).

*Status* : Very rare, known only from a female type specimen.

### DORIAE GREEN SNAKE

#### 106. *Opheodrys doriae* (Boulenger 1888)

1888. *Cyclophiops doriae* Boulenger *Ann. Mus. Civ. Genova* (2)vi, : 599, pl. vi. Kachin Hills, Burma : London and Genoa).

1943. *Opheodrys doriae*, Smith, *Fauna Brit. Ind.*, 3 : 181.

The maximum length is 1070 mm, tail 220 mm. Dorsal color uniform green above, the green color extending on to the ends of ventrals. Upper lip and lower parts whitish. *Ablabes hamptoni* Boulenger (1900, *Ann. Mag. Nat. Hist.*, (7) vi, p. 409), described from a single female specimen obtained at Mogok, Burma, differs scarcely if at all from *Liopeltis doriae* and must be regarded as a synonym of it. Maxillary teeth 25-33, small, equal; eye large, its diameter is greater than its distance from the nostril; Nostril between two nasals. Supralabials 8, the 4th and 5th touching the eye. Scales in 15 : 15 throughout. Ventrals 168-187. Subcaudals 74-80. Anal 1.

*Distribution* : Assam (Manipur); Upper Burma (Kachin Hills); S. E. Yunnan.

*Status* : A rare snake, known only by 3 specimens.

### Genus 25. *Leopeltis* Fitzinger 1843

1843. *Leopeltis* Fitzinger, *Syst. Rept.*, : 26.

1943. *Leopeltis*, Smith, *Fauna Brit. Ind.*, 3 : 182.

Small-sized snakes, not exceeding 1100 mm, with a slender cylindrical body of almost the same girth throughout and a long tail approximately 1/4 to 2/5 as long as the body. They inhabit hilly tracts in the Oriental Region. Maxillary teeth 17-33, subequal. Body elongate, cylindrical. Head is slightly depressed, distinct from the neck. Eye with round pupil. Preocular 1, rarely 2. Postocular 2 or 3, only the upper in contact with the parietal. Anterior temporal usually one. Loreal present or absent. Scales smooth, without apical pits, in 13, 15 or 17 rows; throughout the body. Ventrals rounded. Subcaudals paired, anals 1 or 2. This genus is closely allied to *Eirenis*, but

it differs from *Eirenis* in having the same number of rows throughout the body-i.e., at two head-lengths behind the head, at mid-body and at two head-lengths before the vent. Smith (1943, p. 135) distinguished these genera by the presence (*Contia* = *Eirenis* and absence (***Liopeltis***) of the apical pits.

### Key to the species of Genus *Liopeltis*

1. Nostril in a long undivided nasal; scales in 15 rows throughout the body
  - A. No loreal; subcaudals 53-78; head with a series of lateral spots on each side ..  
.....*L. calamaria*
  - B. Loreal present; subcaudals 70-105; head with a lateral stripe .....*L. frenatus*  
Loreal present; subcaudals 116-134 .....*stoliczkae*
- II. Nostril between two nasals.
  - A. Scales in 13 rows throughout; a broad dark bar across the nape .....*L. scriptus*
  - B. Scales in 15 rows throughout; anal divided; 6 supralabials: brown with small black spots and lateral transverse bars on the anterior part of the body .....  
.....*L. rappi*
  - C. Scales in 17 rows throughout, reddish brown above; head blackish; a yellow streak from the eye to the angle of the mouth .....*L. nicobriensis*

### OLIVACEOUS RACER

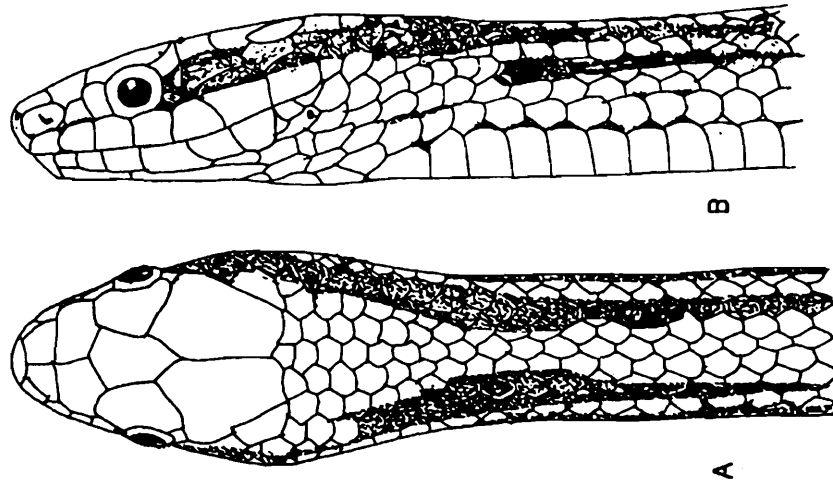
#### 107. *Liopeltis frenatus* (Gunther 1858)

(Text fig. 76)

1858. *Cyclophis frenatus* Gunther, *Cat. Col. Sn. Brit. Mus.*, 140 (Afghanistan; London).

1943. *Liopeltis frenatus*, Smith, *Fanua Brit. Ind.*, 3 : 182.

The maximum length of this snake reaches upto 760 mm, tail 335 mm in males and 645 mm, tail 195 mm in females. Dorsal colouration is olivaceous, the scales edged with black and white; thus forming longitudinal thin stripes on the anterior half of the body; ventrum and upper lips are white; a broad black stripe emerges from the eye and extends on the lateral aspect of neck and body (this black bar is from postocular to the body and covers the temporal scales). Maxillary teeth are 19-21; nostril is lateral in position, rather large and pierced into a long undivided nasal shield, in certain individuals a suture is present from the nostril to the internasals; loreal squarish or little longer, than high; supralabials are 7, third and fourth touch the eye; preocular 1; postocular 2; loreal 1; scales of the body are in 15 rows throughout; ventrals 140-172; subcaudals 70-105, paired; anals are 2. Hemipenis extends to the 10th caudal plate; the distal half of the organ is calyculate, the cups are deeply scalloped and uniform in size (thin edges bear spines; the proximal half of the organ is with spines, which are large and few in number, at the distal end of the organ there is a short broad fold, just parallel to the sulcus.



**Fig. 76.** *Liopeltis frenatus* (Gunther). A. Dorsal pattern of head and neck, B. Lateral pattern of head and neck.

*Distribution* : India : Meghalaya (Khasi Hills); Assam.

*Elsewhere* : Laos, (Northern part; Annam) Myanmar. Found between 200-6000 feet altitude in the hilly areas.

*Status* : A rare snake.

#### GREYISH RACER

#### 108. *Liopeltis stoliczkae* (Sclater 1891)

1891. *Ablabes stoliczkae* Sclater, *J.A.S. Bengal*, **60** : 234, pl. 6, fig. 1 (Naga Hills, Assam; Calcutta).

1943. *Liopeltis stoliczkae*, Smith, *Fauna Brit. Ind.*, **3** : 184.

The maximum length of this snake reaches upto 600 mm, tail 225 mm in males and 545 mm, tail 205 mm in females. Dorsal colour is greyish; ventrum is light grey with yellowish tinge; lateral aspect of head is with a broad black stripe which extends on the anterior part of body and ultimately merges with the body colour; outer margins of the ventral shields are grey, thus forming a stripe; a less prominent and thin median stripe may be present in few individuals. The head is quite distinct from the neck and is considerably depressed; snout projects out and almost two times longer than the eye; maxillary teeth are 27 or 28 nostril is very small and is pierced into a distinct undivided nasal shield; loreal scale is squarish and in few snakes is united with the posterior nasal; supralabials are 8, fourth and fifth touch the eye; genials are subequal, body scales in 15 : 15 : 13 rows; ventrals are 148-154; subcaudals 116-134; anals are 2. Nothing is known about the hemipenis.

*Distribution* : India, Sikkim, West Bengal (Darjeeling district).

*Elsewhere* : Myanmar (Karin Hills).

*Status* : A rare snake, known by 5 examples.

109. *Liopeltis calamaria* (Gunther 1858)

1858. *Cyclophis calamaria* Gunther, *Cat. Col. Sn. Brit. Mus.*, : 250 (Ceylon; London).

1943. *Liopeltis calamaria*, Smith, *Fauna Brit. Ind.*, 3 : 184.

The maximum length of males 335 mm, tail 108 mm and females 390 mm, tail 100 mm. Dorsal colouration is light brown or olive green, the dorsal scales usually edged with black showing as more or less distinct longitudinal lines, the most conspicuous being one on each side of the vertebral line, the area between these generally darker than the rest of the body. Belly pale yellow. Head with a series of dark spots on each side. Maxillary teeth 21-26. Head is not depressed, quite distinct from the neck; snout is not at all projecting and not twice long as the eye. Nostril very small, in a long undivided nasal. Loreal absent, presumably fused with the nasal. Supralabials 7, rarely 6, the 3rd and 4th touching the eye. Scales in 15 rows throughout. Ventrals 126-163. Subcaudals 53-78. Anals 2. Hemipenis is similar to *L. franatus* but in this species, the calyces are smaller, more deeply scalloped and packed so closely together that only the papillae are visible on the surface; the spines are shorter, thicker and more numerous and there is no fold.

*Distribution* : India : Western Ghats as far north as Matheran; Tinnevely Hills; Karnataka (Mysore Plateau, Bangalore); Uttar Pradesh (Melaghat, Almora district, Kurkhana, Gonda district); Chota Nagpur (Surguja); Western Himalayas; plains adjacent to Nepal.

*Status* : A hill species, well distributed but nowhere common.

110. *Liopeltis nicobariensis* (Stoliczka 1870)

1870. *Ablabes nicobariensis* Stoliczka, *J.A.S. Bengal*, 39 : 184, pl. 11. fig. 1 (Nancowry Haven, Camorta Island, Nicobars, Calcutta).

1943. *Liopeltis nicobariensis*, Smith, *Fauna Brit. Ind.*, 3 : 185.

The maximum length of this snake reaches upto 440 mm, tail 110 mm in female. Dorsal colouration of the anterior half of the body is reddish brown, posterior half is greyish-black; dorsal aspect of head is blackish, with a broad yellow streak emerging from eye and reach upto the gaps of the mouth; a black collar with yellow margins is present, the anterior margin is more distinct, dorsum is with a series of faint blackish-grey spots, forming a dark undulating band; lateral aspects of body are with blackish grey frecks, both the upper brown and this one is separated by a series of closely set black spots, which are more clear on the posterior part of the body; chin is dusky; ventrum is yellow with a vermilion tinge; each ventral shield is with a large black spot near its outer extremity. Head is not depressed, slightly distinct from the neck; snout not projecting, two times longer than the eyes temporals 2 + 2; genials subequal; maxillary teeth 17-18; nostril is quite large between the two nasals, the posterior nasal shield is much larger than the other and in contact with the preocular;

loreal is not present; supralabials are 7, third and fourth touch the eye, 7th upper labial is very large; body scales in 17 : 17 : 17 rows; ventrals 192; subcaudals 84; anal 2; Hemipenis is not known.

*Distribution* : India : Nicobar Islands (Nancowary Haven, Camorta Island).

*Status* : Known by a single type specimen.

### 111. *Liopeltis rappi* (Gunther 1860)

1860. *Ablabes rappii* Gunther, *P.Z.S.*, : 154, pl. 26, fig. B (Sikkim, London).

1943. *Liopeltis rappi*, Smith, *Fauna Brit. Ind.*, 3 : 186.

The maximum length in males reaches upto 455 mm, tail 115 mm and in females 440 mm, tail 110 mm. Dorsal color is brown, with a broad black bar across the nape and a double series of transverse dark spots on the anterior part of the body. All these markings fade out in adult snakes; ventrum is yellowish in life. Head is slightly depressed; snout is projecting, two times longer than the eye; nostril is quite large and pierced between the two nasals; loreal is 1, slightly longer than high; temporals 1 + 1, anterior temporal is very long in many individuals; anterior genials longer than the posterior; supralabials 6, the 3rd and 4th touch the eye; maxillary teeth 20-22; body scales in 15 : 15 : 15 rows; ventrals 178-195; subcaudals 60-76; anals 2. Hemipenis extends upto the 7th caudal plate; the calcylate area occupies less than half of the organ; the cups are smallest at the tip and increase in size towards the spinose area; the spines are large and numerous and of almost uniform size except at the extreme base, where there are two very large ones; there is no fold.

*Distribution* : India : West Himalayas (Simla); East Himalays (Darjeeling district).

*Elsewhere* : Nepal (E. Himalayas).

*Status* : Commonly available in Darjeeling district; if at all available must be rare in western Himalayas (Simla specimen was obtained by Stoliczka, no other specimen of this species has since been obtained in the W. Himalays, the locality given as Simla may be wrong).

### 112. *Liopeltis scriptus* (Theobald 1868)

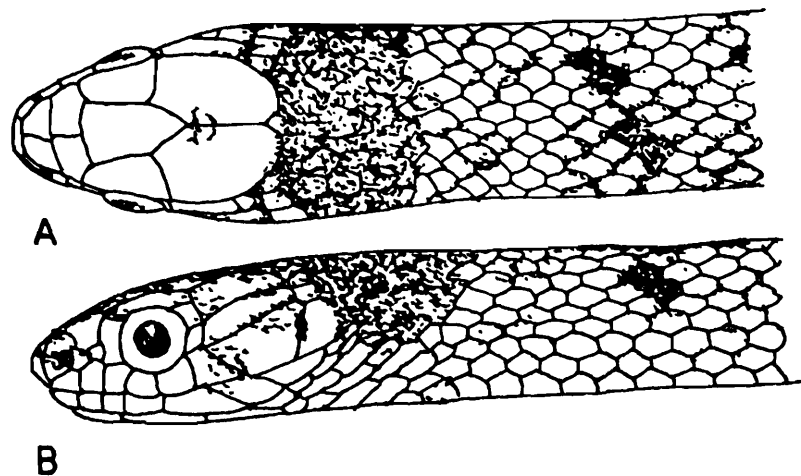
(Text fig. 77)

1868. *Ablabes scriptus* Theobald, *Linn. Soc.*, x, : 42, and *Cat. Rept. Asiat. Soc. Mus.*, 1868, : 49 (Martban, Burma; Calcutta).

1984. *Liopeltis scriptus*, Mahendra, *Ann. Zool.*, 22 : 270.

*Total length* : Male 465 mm, tail 155 mm, female 495 mm; tail 175 mm.

Dorsal colour is brown with a few black dots on either side of the vertebral line on the front part of the trunk, a broad dark light-edged bar across the nape. Lips yellow with black spots. Lower parts whitish or yellowish.



**Fig. 77.** *Liopeltis scriptus*. A. Dorsal pattern of head and neck, B. Lateral pattern of head and neck.

Maxillary teeth 26-28. Nostril large, between two nasals. Loreal very small. Temporals 1+2, supralabials 8, the 3rd, 4th and 5th touching the eye. Scales in 13 rows throughout. Ventrals 126-146. Subcaudals 87-98. Anals 2. Hemipenis extends upto the seventh caudal plate; extending the whole length of the organ are six more or less distinct longitudinal folds; the area between them at the distal end is covered with flattish, irregularly shaped, papilla—like structures; the folds themselves are composed of dense, sponge-like tissue through which project small spines; the two most distinct folds form border of the sulcus.

*Distribution* : Southern Myanmar (Martaban; Thailand (Sai-Yoke, Kanburi district; Khao Luang, Nakon Sritamarat Mountains; Pulau Panjang, 1. of Puket).

*Status* : It is a rare snake, is known by few specimens.

#### Genus 26. *Eirenis* Jan 1863

1863. *Eirenis* Jan, *Arch. Zool. Anat. Phys.*, ii, : 246 (type *collaris*).

1984. *Eirenis*, Mahendra, *Ann. Zool.*, 22 : 272.

Boulenger (1894, p. 255) and Malcolm A. Smith (1943, p. 187) called this genus *Contia* Baird and Girard, 1853, but Stickel (1951), in view of some details of the skull and hemipenis of the two genera concerned, restricted *Contia* to western North America and *Eirenis* to North Africa and part of Eurasia. The genus *Eirenis* is distinguishable from *Liopeltis* only in minor details.

Maxillary teeth 12-28, subequal. Body slender, cylindrical, with a little taper. Head depressed, more or less distinct from the neck. Eye with round pupil. Nostril in a single elongated nasal. Loreal sometimes absent. Supralabials 6-8, two of them touching the eye. Scales smooth, with or without apical pits, in 15 rows at mid-body, the rows normally diminishing in number towards the vent. Ventrals rounded. Subcaudals paired. Anals 2.

*Distribution* : North Africa and islands of the Eastern Mediterranean through South-West Asia to West Pakistan.

### Key to the species of Genus *Eirenis*

- I. Maxillary teeth 14 or 15; ventrals 182-235; subcaudals 63-99; 3rd and 4th supralabials touching the eye; head and nape with black cross bars or entirely black above ..... *E. persica*
- II. Maxillary teeth 27 or 28; ventrals 148-154; subcaudals 116-134; 4th and 5th supralabials touching the eye, a broad black stripe on the side of the head ....  
..... *E. stoliczkae*

### DARK-HEADED RACER

#### 113. *Eirenis persica* (Anderson 1872)

1872. *Cyclophis persicus* Anderson; *P.Z.S.*, : 392, fig. 8 (Bushire, Persia : London).

1984. *Eirenis persica*, Mahendra, *Ann. Zool.*, **22** : 273.

*Total length* : Female 480 mm., tail 112 mm.

Colour is light brown to pale grey, buff or pinkish, uniform or with transverse dark bars, narrower and more distinct anteriorly, with bases of the scales darker. Head uniform grey to blackish from snout to nape or with a light transverse band just behind the eyes and another crossing the tips of the parietals. Ventral surface and lips white to cream.

Maxillary teeth 14 or 15. Nostril in single elongated nasal. Loreal absent or tiny. Preocular 1. Postocular 1. Anterior temporal 1, supralabials 7, rarely 6 or 8, the 3rd and 4th touching the eye. Scales in 15 : 15 : 13 rows. Ventrals 182-235. Subcaudals 63-99. Hemipenis extends upto the 13th caudal plate, not forked and bears spines throughout, those at the extreme base are slightly larger than the others. There is a distinct fold extending almost the whole length of the organ.

*Habits* : Records of this snake are from rocky and usually hilly terrain, with vegetation varying from sparse xeric scrub to light mesic forest. It has been found in the open at night or discovered concealed beneath stones. The habitus of the species suggests it is a crevice dweller rather than a true burrower (Minton, 1966, p. 129).

*Distribution* : Pakistan (Sind, Baluchistan, N.W.F. Provinces); Iran and Transcaspia, Minton (1966, p. 129) suspects that the West Pakistan is not "identifiable with topotypic *persica* from southwestern Iran."

*Status* : A common snake, throughout its range.

#### 114. *Eirenis mcMahonii* (Wall 1911)

1911. *Contia mcMahonii* Wall, *J. Bombay N.H.S.* xx, : 1037 (Baluchistan; Quetta and xxix, 1923 : 771.

1943. *Eirenis mcmahoni*, Smith, *Fauna Brit. Ind. Rept.*, 3 : 189.

In measurements and other taxonomic characters this snake is like *E. persica* but differs in colouration, in having 13 scales rows anteriorly and more subcaudal, 91-96. The dorsal colouration is uniformly light brown, the scales basally are darker and is with dusker shade in adults; in juveniles the head is blackish; ventrum is uniformly white.

*Distribution* : Pakistan (Quetta, Baluchistan).

*Status* : Wall described this species in 1911 from 4 specimen which were in the Quetta Museum and were lost when Quetta was destroyed by the earthquake in 1935.

### Genus 27. *Lytorhynchus* Peters 1862

1862. *Lytorhynchus* Peters, *Acad. Wiss. Berlin*, : 273 (type *Heterodon diadema* Dum. Bibr. and Dum by monotypy).

1984. *Lytorhynchus*, Mahendra, *Ann. Zool.*, 22 : 260.

Maxillary teeth 6-9, the last two longer than the others and separated from them by an interval. Head slightly distinct from the neck, with cuneiform projecting snout. Body elongate, cylindrical. Eye moderate or large, with vertically elliptic pupil. Rostral large, projecting, angularly bent in profile, concave inferiorly. Nostril an oblique slit between two large nasals. Scales smooth or feebly keeled, without apical pits, in 19, rarely 21 rows at mid-body. Ventrals angulate laterally. Tail moderate or short. Subcaudals paired.

*Range* : North Africa and South-Western Asia. Leviton and Anderson (1970) recognize six species, of which three occur in the Indian subcontinent. They have also shown that the inclusion of the South-American species of leaf-nosed snakes, currently referred to *Phyllo-rhynchus* in this genus (Andrushko and Mikkay, 1964) is not tenable.

### Key to species of the Genus *Lytorhynchus*

- I. Rostran shield when viewed from above, anchor-shaped with the shank separating the internasals for half their length; prefrontals divided; eye completely separated from the supralabials head with a broad stripe from the frontal to the nape ..  
..... *L. maynardi*
- II. Rostral shield when viewed from above, not anchor-shaped, but roundish or subseparish.
  - A. Head with a dark anchor-shaped mark with the shank extending from the prefrontal to the nape and the arms extending through the eyes to the gapes of the mouth; prefrontal usually single; eye completely separated from the supralabials. .... *L. ridgewayi*
  - B. Head with an elongated blotch extending posterior-ward from the parietals and with two postocular stripes; prefrontals 2; the 5th supralabial alone touching the eye. .... *L. paradoxus*

## AFGHAN AWL-HEADED SNAKE

115. *Lytorhynchus ridgewayi* Boulenger 1887

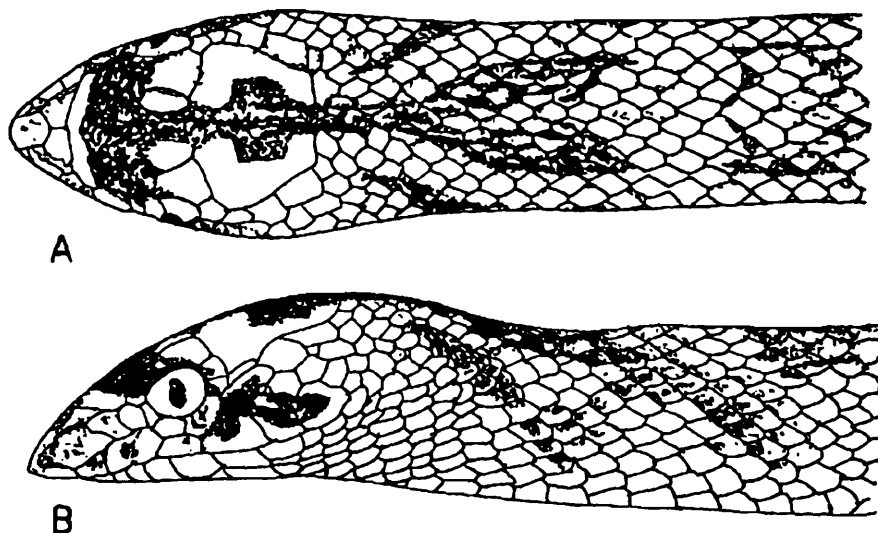
(Text fig. 78)

1887. *Lytorhynchus ridgewayi* Boulenger, *Ann. Mag. nat. Hist.* (5) xx, : 413 (Chinkilok, Afghanistan : London).

1884. *Lytorhynchus ridgewayi*, Mahendra, *Ann. Zool.*, 22 : 263.

*Total length* : 500 mm, tail 80 mm.

Dorsal colour is pale buff or greyish with a series of brown, black-edged, squarish or transverse spots. Sides less distinctly marked with smaller spots. Head with a dark anchor-shaped mark, its arms extending from the angle of the mouth through the eyes across the frontal and the prefrontal; the shank expanding into a large spot on the middle of the parietals and bifurcating on the nape. Lower parts uniform white.



**Fig. 78** *Lytorhynchus ridgewayi* Boulenger. A. Dorsal pattern of head and neck, B. Lateral pattern of head and neck.

Rostral as broad behind as in front, its posterior border rather convex, fitting, in between the anterior extremities of the internasals. Prefrontal usually single. Loreal usually 1. Preoculars 2. Postoculars 2. Suboculars 2 to 4, separating the eye completely from the supralabials. Supralabials 7-9. Ventrals 161-188. Subcaudals 41-54. Anal 1. Hemipenis extends upto the 10th caudal plate, not forked. The distal half is calyculate, the cups are with spinose edges; this area merges gradually into spinose area, the spines at the base being shorter than the others.

*Habits* : These snakes were found not in sand dunes, but in gravel desert with considerable scrubby vegetation and in soil varying from almost pure clay (perhaps an old lake-bed) to clay liberally admixed with sand gravel. They prey upon small lizards, overpowering them by constriction and shaking them before swallowing and are quiet in disposition, reacting to disturbance by curling up and hiding the head.

*Distribution* : "Southern and Eastern Iran, lowland and intermediate elevations of Western and Southern Afghanistan and adjacent areas of Pakistan and the Transcaspian region of the Soviet union" (Leviton and Anderson, 1970, p. 272).

*Status* : A common snake.

#### SIND AWL-HEADED SNAKE

##### 116. *Lytorhynchus paradoxus* (Gunther 1875)

1875. *Acantiophis paradoxa* Gunther, *P.Z.S.*, : 232, fig. 5 (N. India : London).

1984. *Lytorhynchus paradoxus*, Mahendra, *Ann. Zool.*, **22** : 264.

*Total length* : 370 mm; tail 60 mm.

Dorsal colour is pale brown to greyish white with a median series of brown to sooty blotches separated by cream-coloured interspaces and a pale tan lateral series of smaller spots. Head with a large rhomboidal brown spot behind the parietals and a brown streak behind the eye. Belly white.

Rostral seen from above, bluntly rounded anteriorly and convex behind, pushed in between the anterior borders of the internasals, thus separating these shields for one-third of their length. Prefrontals paired; loreal 1; preoculars 2; postoculars 1 or 2. A presubocular present separating the 4th supralabial from the eye. Supralabials 8, the 5th touching the eye. Scales smooth. Ventrals 169-188. Subcaudals 40-53. Anals 2. Hemipenis is like *L. ridgewayi*.

*Distribution* : West Pakistan (South-west of Kotri, Umarmkot, Thar and Pakar District).

*Status* : A rare snake, known by 4 specimens.

#### MAYNARD'S AWL-HEADED SNAKE

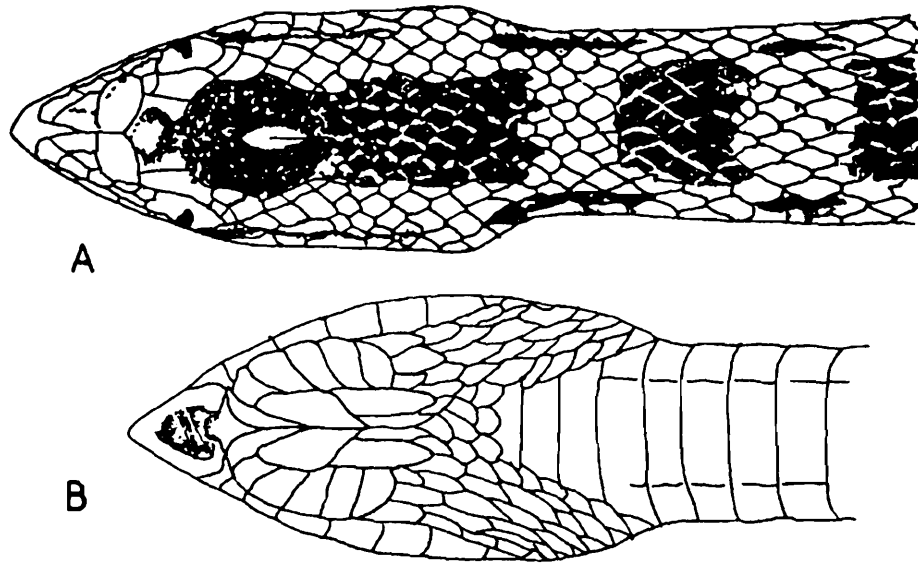
##### 117. *Lytorhynchus maynardi* Alcock & Finn. 1896 (Text fig. 79)

1896. *Lytorhynchus maynardi* Alcock & Finn., *J. A. S. Bengal*, ixv, : 562, pl. 14 (S. of Koh-Malik-do-Khand, Afghan-Baluchistan Frontier; Calcutta and London).

1984. *Lytorhynchus maynardi*, Mahendra, *Ann. Zool.*, **22** : 262.

Body slender, subcylindrical, with even taper. Rostral shield pointed anteriorly, not truncate, anchor-shaped when viewed from above the shank separating the internasals for half their length. Prefrontals divided. Loreal 1. Preoculars 2, small. Postoculars 2 or 3. Suboculars 2, completely separating the eye from the supralabials. Supralabials normally 7, occasionally 6 or 8. Mental produced anteriorly fitting into a depression in the upper jaw. Scales smooth. Ventrals 187-202. Subcaudals 53-62. Anals 2. Hemipenis as in *L. ridgewayi*.

*Total length* : 400 mm, tail 65 mm.



**Fig. 79.** *Lytorhynchus maynardi* Alcock & Finn. A. Dorsal pattern of head and neck, B. Ventral pattern of head and neck.

*Color* : Pale orange to pinkish above. White below, with 34-45 jet black cross-bars on the body and 12-15 on the tail. Head with a dark elongate blotch starting on the frontal, expanded on the parietals and extending on to the nape and in some cases with a dark postocular stripe. Lips white.

*Habits* : Minton (1966, p. 130) found them "common in tracts of fine, wind-blown sand near Nushki. In mid-May they emerged from the sand about an hour after sunset and were active until about midnight when the temperature dropped appreciably. When frightened by lights, they glided rapidly over the sand and often dived below its surface. When restrained they are pugnacious little snakes, drawing the forepart of the body into S-shaped loops and vibrating the tip of the tail. They strike repeatedly but almost always with the mouth closed.

"In captivity they were poor feeders, although some took small lacertids and geckos, overpowering them by constriction and then shaking them repeatedly as they were being swallowed. During the humid monsoon weather in Karachi, it became almost impossible to keep the terrarium for the snakes dry and they stopped feeding and died"

*Distribution* : Pakistan (Baluchistan desert basin, Nushki); Afghanistan, west to the Iranian border.

*Status* : A rare snake, known only by three type specimens.

#### Genus 28. *Coronella Laurenti* 1768

1768. *Coronella Laurenti*, *Syn. Rept.*, (type *Lievis = austriaca*); Boulenger, *F. B. I.* 1890, : 308.

1943. *Coronella*, Smith, *Fauna Brit. Ind.*, 3 : 198.

Maxillary teeth 12-20, larger posteriorly, last 2 are largest and separated or not by a slight diastima; head may or may not distinct from the neck; eyes are large, with round pupil, body is cylindrical with smooth scales which possess apical pits, in 19, 21 or 23 rows, angulated laterally; tail is moderately large or short in comparison to the body, subcaudals are paired; posterior dorsal vertebrae are with distinct hypapophysis. This genus shows close similarity with genera like *Coluber* and *Oligodon* and the characters of this genus, which separate it from these genera are not properly established and the position of the species in this genus are disputed and are subject to the further investigations. Werner (1929) tried to establish the status of the genus on the basis of the hemipenial characters by comparing the European (*Coronella*), Asian (*Wallophis*) and African (*Meizodon*) material of this genus but still the position is uncertain. This genus is widely distributed in Europe, Africa, North of Equator; Asia (India and China). About 8 species are known to be present in this genus, only 1 inhabits India.

#### NORTH INDIAN OLIVE-BROWN SNAKE

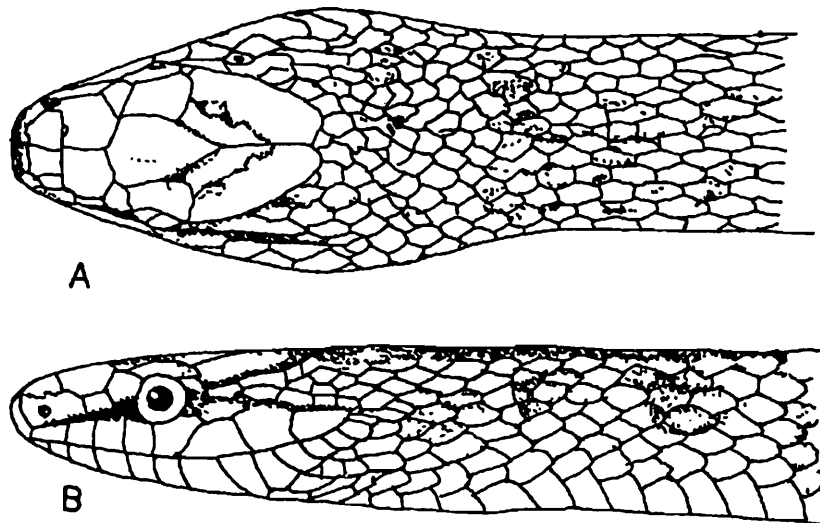
#### 118. *Coronella brachyura* (Gunther 1866)

(Text fig 80 & 81)

1866. *Zamenis brachyurus* Gunther, *Ann. Mag. Nat. Hist.* (3) xvii : 27, pl. 4, fig. A (Poona; London).

1943. *Coronella brachyura*, Smith, *Fauna Brit. Ind.*, 3 : 195.

The maximum length of this snake reaches 515 mm., tail 75 mm. in males and 450 mm., tail 55 mm. in females. Dorsal colouration is olive-brown, with faint variegations on the anterior half of the body and head; ventrum is whitish. Besides the characters mentioned in the genus, other features are, nostril is large and pierced in between



**Fig. 80.** *Coronella brachyura* (Gunther). A. Dorsal pattern of head and neck, B. Lateral pattern of head and neck.

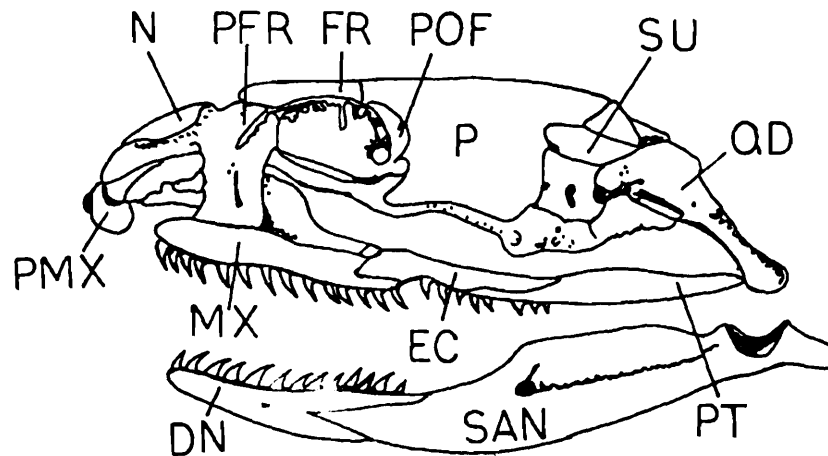


Fig. 81. Skull : *Coronella austriaca* (The smooth snake).

two nasal scales; internals are distinct, about 1/2 to 1/3 of the length of prefrontal shield; length and breadth of frontal shield is equal, it remains in contact with preocular shield which is quite large; loreal scale is longer than high; postocular shields are 2; temporals 2+2; supralabials are 8, fourth and fifth touch the eye; posterior genial scales are smaller than the anterior genials, both the posterior genials are separated by 2 or 3 series of small scales; body scales are in 23 : 23 : 19 rows; ventrals are large and somewhat rounded 200-224 in number; tail is short in comparison to the body, subcaudals are 46-53; anal is single. Hemipenis extends upto the 13th caudal plate; the organ is not forked; the distal half of the penis is calyculate, the cups are large and with scalloped edges; the proximal half of the organ is with spines out of them 2 or 3 at the base of the organ are much larger than the others.

*Distribution* : India : North India, Maharashtra (Poona district and Visapur, near Bombay; S. E. Berar).

*Status* : A rare snake.

### Genus 29. *Oligodon* Boie 1827

1827. *Oligodon* Boie, *Isis* : 519 (type *bitorquatus*).

1943. *Oligodon* Smith, *Fauna Brit. Ind.*, 3 : 195.

1966. *Oligodon*, Minton, *Bull. Am. Mus. Nat. Hist.*, 134 : 133.

Genus *Oligodon* includes the snakes with a short body with stout and cylindrical shape; head is quite short and can not be differentiated with neck; snout is short, blunt, obtusely rounded and having a much enlarged rostral which is quite visible from above eyes are distinct with round pupil; body scales are smooth and are devoid of apical pits; ventrals shields are rounded or in many species with obtuse lateral keel; subcaudal shields are paired. Other important characters of the genus are : posterior sublinguals are shorter in comparison with the anterior sublinguals; maxillary

teeth are from 6-16, the posterior very strongly enlarged and compressed; palatine teeth well developed or vestigial; hypapophysis are absent on the posterior dorsal vertebrae; nostril is located in an elongated nasal shield, partly or completely divided by a vertical suture; rostral partly separates the internasal shields; loreal is square shaped; 1 pre and 2 postoculars; 3 or 4 lower labials are in contact with the anterior genials, which are 1.5 to 2 times as long as the posterior. The range of this genus extends mainly in oriental region, but few species are also available in Southern China, Taiwan, South-Western Asia and certain islands of Indo-Australian Archipelago. More than 60 species are known so far.

### Key to the species of Genus *Oligodon*

- I. No internasals; rostral in contact with and partly separating the prefrontals from each other, scales in 15 rows.
  - 7 supralabials ..... *O. brevicauda*
  - 5 supralabials ..... *O. hamptoni*
- II. Internasals present, completely separated from each other by the rostral; no loreal; 4 or 5 supralabials, the third touching the eye; scales in 13 rows .....  
 ..... *O. planiceps*
- III. Internasal in contact
  - A. Anal 1.
    - Supralabials 6; scales in 17 rows at mid-body; head with the typical markings ..... *O. woodmasoni*
    - Supralabials 7 or 8. 4 internasals; 4 prefrontals; scales in 21 rows at mid-body; head spotted with brown, with a chevron on the nape ..... *O. splendidus*
  2. Internasals; 2 prefrontals.
    - Head uniform brown above, or with only a nuchal chevron, usually 1 anterior temporal; scales in 17 rows ..... *O. cinereus*
    - Head with the typical pattern; scales in 19-21 rows.
      - (i) 2 anterior temporals; Maxillary teeth 9-10; V. 165-195 c. 37-58 *O. cyclurus*
      - (ii) 2 anterior temporals; maxillary teeth 10-12; V. 162-208; C. 53-68.
    - 1 anterior temporal ..... *O. albocinctus*
  - B. Anals 2.
    - a. Scales in 13 or 15 rows at mid-body.
      - (i) Head with yellow markings on the snout and lips; nape with an incomplete collar ..... *O. mcdougalli*

- Head with the typical markings without modifications ..... *O. erythrorhachis*
- (ii) Head with the typical markings, modified by influence; in one subspecies, *O. taeniolatus melaneus*, the markings absent ..... *O. taeniolatus*
- Head with indications of the typical markings
- Nasal divided; one postocular ..... *O. dorsalis*
- Nasal undivided; two postoculars ..... *O. torquatus*
- b. Scales in 17 rows at mid-body.
- (i) Head in the adult with very faint or no markings; in young dark spots in front and a dark transverse mark behind in place of the typical pattern .....  
..... *O. cruentatus*
- (ii) Head with 3 chevrons, separate from one another ..... *O. arnensis*
- (iii) Head with the typical pattern of the three markings. Back with 3 light longitudinal lines, separating 4 dark longitudinal stripes ..... *O. theobaldi*
- Back with a series of transversely arranged large blackish spots .....  
..... *O. vensustus*
- Back with a series of whitish black-edged cross bars ..... *O. melanozonatus*
- (iv) Head with the typical three markings, in addition to which is an elongated black spot between the anterior crescent and the nuchal chevron .....  
..... *O. erythrogaster*
- Head with the three typical markings over developed and mesially connected to one another by a broad patch ..... *O. affinis*
- (v) Head with three back transverse bands connected longitudinally on the median line ..... *O. travancoricus*

#### NORTH-EAST INDIAN KUKRI SNAKE

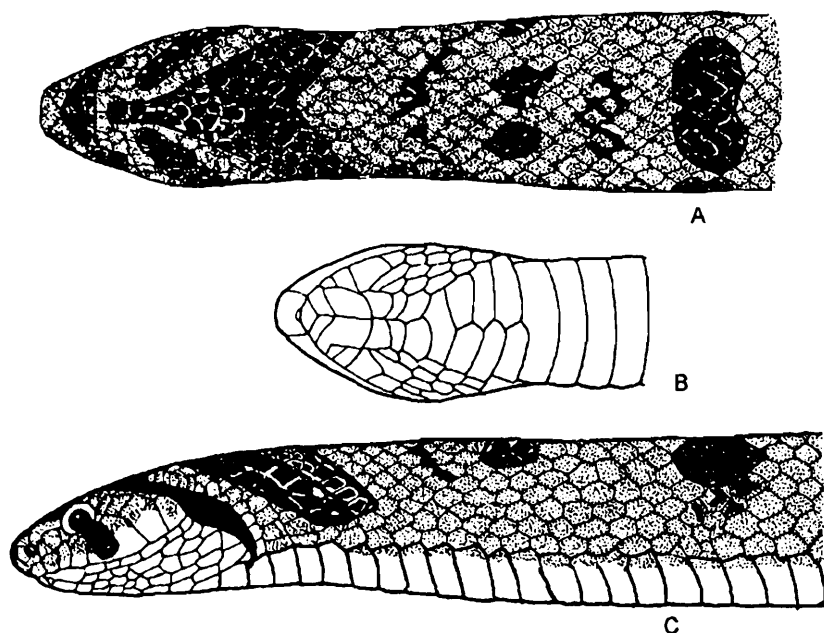
##### 119. *Oligodon cyclurus* (Cantor 1839)

(Text figs 82, 83)

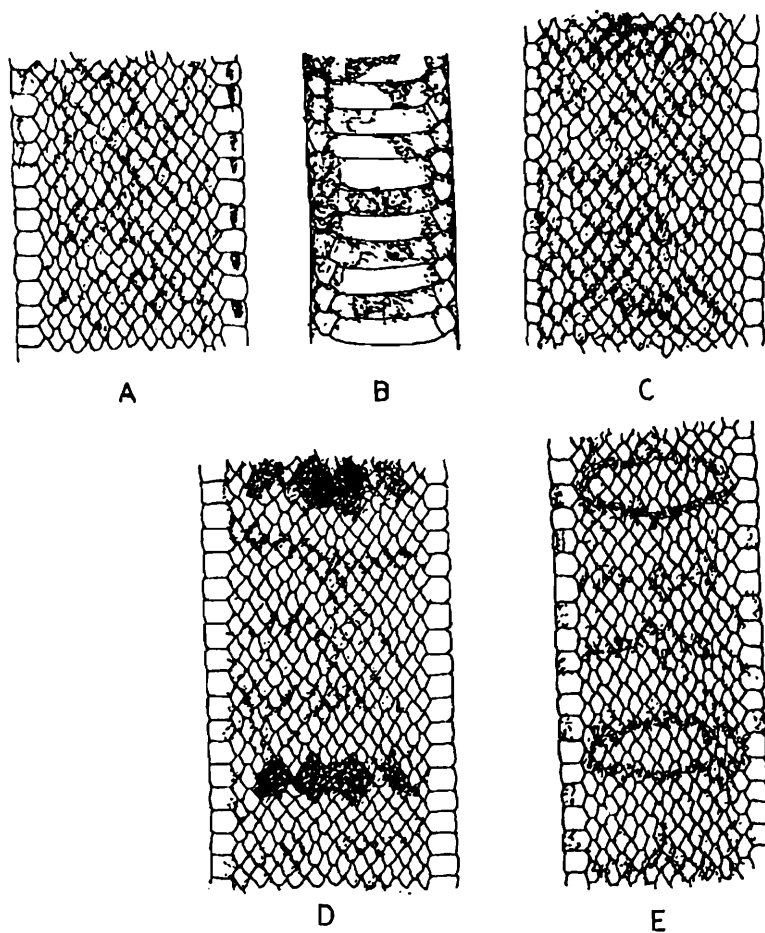
1839. *Coronella cyclura* Cantor *P.Z.S.*, : 50 (no type loc. given; colored sketch in Bodleian Library, Oxford).

1943. *Oligodon cyclurus*, Smith, *Fauna Brit. Ind.*, 3 : 202-206.

The length of the snake reaches upto 940 mm, tail 140 mm in males and 750 mm, tail 120 mm. in females. Dorsal colouration in most of the snakes is brown above (redish or pinkish in life), either with blackish reticulations or with dark spots or with black edged cross bars. Whitish below, with or without spots. Head with more or less distinct typical markings. Internasals 2, in contact. Preocular 1, usually with a presubocular below it. Anterior temporals 2. Supralabials normally 8, the 4th and 5th



**Fig. 82.** *Oligodon cyclurus* (Cantor). A. Dorsal pattern of head and body, B. Ventral view of head, C. Lateral pattern of head and body.



**Fig. 83.** *Oligodon cyclurus* (Cantor). A. Variety I. Dorsal pattern of body, B. Variety I. Ventral pattern of body, C. Variety II. Dorsal pattern of body of type of *Simotes fasciolatus*, D. Variety of III. Dorsal pattern of body, E. Variety V. Dorsal pattern of the body.

touching the eye. Scales in 19 or 21, rarely 17 or 23 rows. Ventrals 161-195, angulate laterally. Subcaudals 36-58. Anal 1. Hemipenis extends upto the 12th caudal plate; it is forked near the 5th plate; proximal to the fork portion there are few large, irregular, convoluted folds or short, soft papillae distally there are numerous small closely set transverse flounces which become finer as they approach the tip of the hemipenis and at this stage calyces are formed; the sulcus lips are most distinct; the organ is devoid of spines.

*Distribution* : India : West Bengal and Assam to the foot of the Himalayas.

*Elsewhere* : Myanmar to the Kakhyen Hills and Tenasserim; Thailand, Cambodia, Cochin, China and Southern China.

*Status* : Most common in all the areas of its range and inhabits the plains and foot hills.

**DARJEELING KUKRI SNAKE**  
120. *Oligodon juglandifer* (Wall 1909)

1909. *Simotes albocinctus* var. *juglandifer* Wall, *J. Bombay N.H.S.*, **19** : 349-*Simotes juglandifer*, Wall, *ibid.*, **20**(1911) : 1162 (Tindhara, Darjeeling dist.), *Oligodon juglandifer*, Wall, *ibid.*, **29**(1923) : 630 and *Rec. Ind. Mus.*, **25**(1923) : 327.

1943. *Oligodon juglandifer*, Smith, *Fauna Brit. Ind.*, **3** : 207.

In general character, measurements colouration (dorsum is brown, with a series of large blackish or dark brown black margined spots, 9 to 18 + 2 to 4 in number, generally placed transversely and separated by 3 more or less distinct cross bars; ventrum may or may not be spotted) and hemipenal structure of this snake is quite similar to *O. cyclurus* but differs in possessing more maxillary teeth; supralabials 7, the 4th or 3rd and 4th touch the eye, in one snake the 6th supralabial is excluded from the labial border. The species also differs by having more number of ventrals 162-208 and subcaudals, 53-68.

*Distribution* : India : West Bengal (Darjeeling district near Gopaldhara).

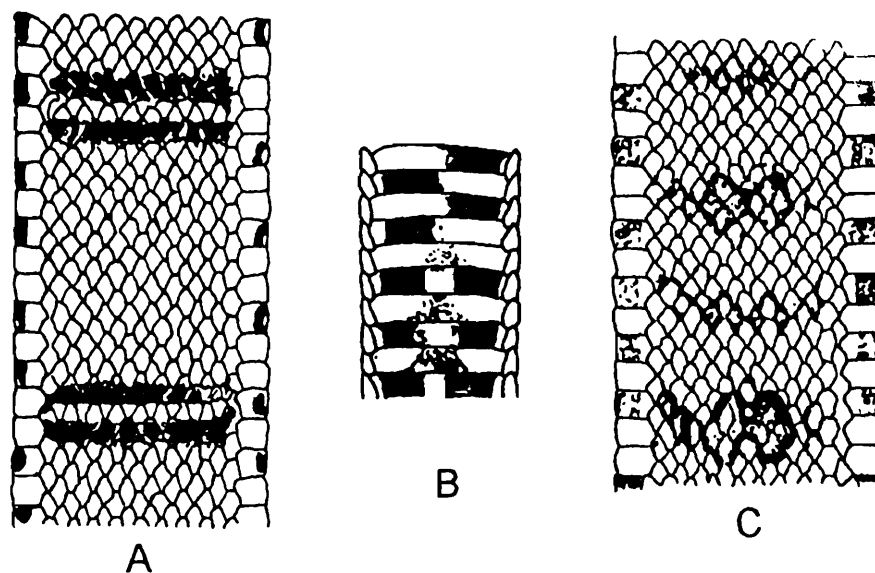
*Status* : It is a rare snake.

**EAST-HIMALAYAN ROSY-BROWN KUKRI SNAKE**  
121. *Oligodon albocinctus* (Cantor 1839)  
(Text figs 84 & 85)

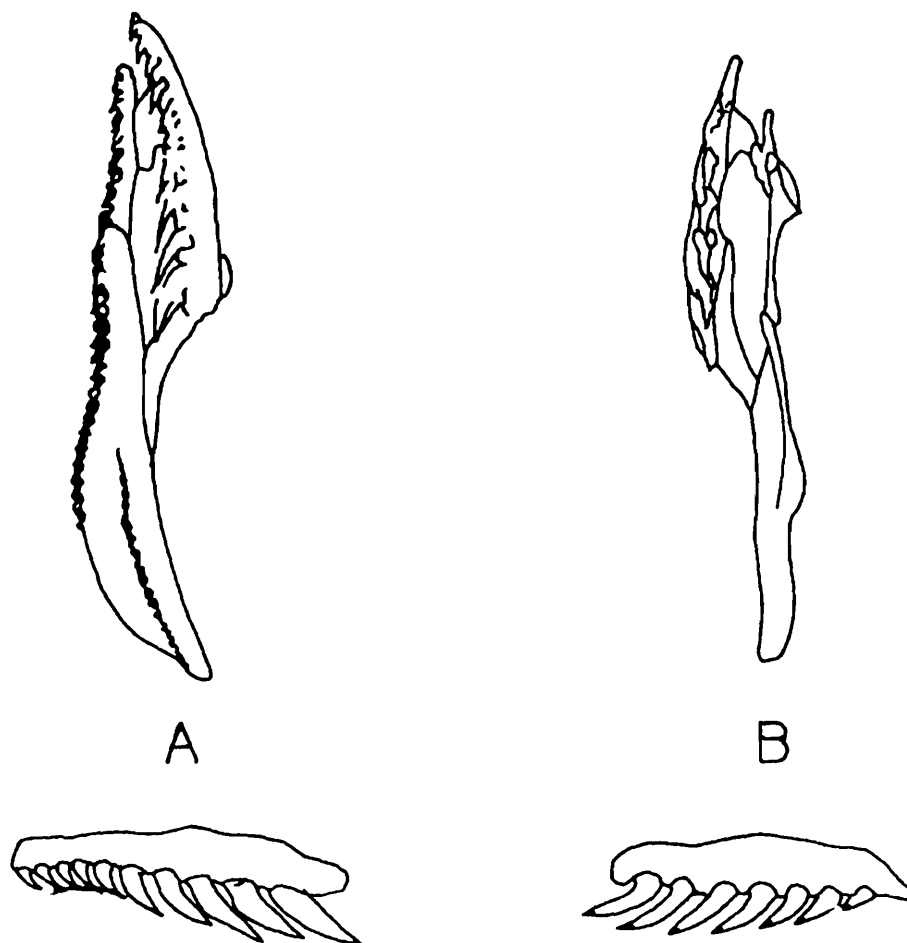
1839. *Coronella albocincta* Cantor *P.Z.S.*, : 50 (Cherrapungi, Assam : Col. Sketch in Bodleian Lib.).

1943. *Oligodon albocinctus*, Smith, *Fauna Brit. Ind.*, **3** : 211-212.

The maximum length is 800 mm, tail 125 mm in males. Dorsal colour is brown or brick-red, either with light black-edged cross-bars widely separated or with dark



**Fig. 84.** *Oligodon albocinctus*. A, B. Dorsal pattern of body of forma typica., C. Dorsal pattern of the body of variety II.



**Fig. 85.** Palato-maxillary arch and maxilla : A. *Oligodon albocinctus*, B. *Oligodon catenata*.

brown spots, transversely elliptical or roundish in appearance. Lower surfaces yellowish or coralline-red, spotted or marbled with black. Head light brown with the typical markings. Loreal 1. Preocular 1. Postoculars 2. Anterior temporal 1. Supralabials 7, the 3rd and 4th touching the eye. Scales in 19-21 rows. Ventrals 177-208, angulate laterally. Subcaudals 40-69. Anal 1. Hemipenis extends upto the 24th caudal plate, not forked; external ventral surface is with a deep, slightly sinuous sulcus, which divides the organ partly into two parts upto 3/4 of its length; proximal portion to the sulcus is calyculate, the calyces are with smooth walls and somewhat irregular in shape; the distal 3/4 part of the penis is with two narrow strongly flounced areas which are separated from one another by the sulcus; on the tip of the organ there are smooth, longitudinal folds and a short pointed papilla, the base of which is attached to the tip of the organ (Smith, 1943).

*Distribution* : The Eastern Himalayas as far west as Sikkim; Bengal, Assam.

*Elsewhere* : Chittagong Province; and Burma as far south as the Arrakan Hills.

*Status* : A common snake in throughout its range.

### 122. *Oligodon melazonotus* Wall 1922

1922. *Oligodon melanozonatus* Wall, *Rec. Ind. Mus.*, xxiv, : 29 (Upper Rotung Valley, Abor Hills : Calcutta and London).

1943. *Oligodon melazonotus*, Smith, *Fauna Brit. Ind.*, 3 : 213.

The maximum length is 520 mm, tail 85 mm. Dorsal color is light brown with a series of whitish black-edged cross bars, which are entirely black in the adult. Whitish below, with squarish black spots which sometimes occupy the whole of the vertebral shield. Head with typical markings, edged with black. Internasals in contact. No loreal, the prefrontal in contact with the 2nd supralabial. Supralabials 6, the 3rd and 4th touching the eye. Anterior temporal 1. Scales in 17 rows. Ventrals 171-173, not angulate laterally. Subcaudals 42-45. Anals 2. Nothing is known about the hemipenis.

*Status* : A rare snake, known only by 2 specimens (both females).

### 123. *Oligodon splendidus* (Gunther 1888)

(Text fig. 86)

1875. *Simotes splendidus* Gunther, *P.Z.S.*, : 231, pl. xxxiii (Wynaad : London).

1984. *Oligodon splendidus*, Mahendra, *Ann. Zool.*, 22 : 199.

*Total length* : Male 710 mm tail 100 mm, female 730 mm; tail 100 mm.

Dorsal colour is light brown with a series of large dark brown black-edged spots, indented in front and behind. Whitish or yellowish below, with dark brown spots on the outer margins of the ventrals. Head spotted with brown, with a dark chevron on the nape, its apex extending to the frontal.

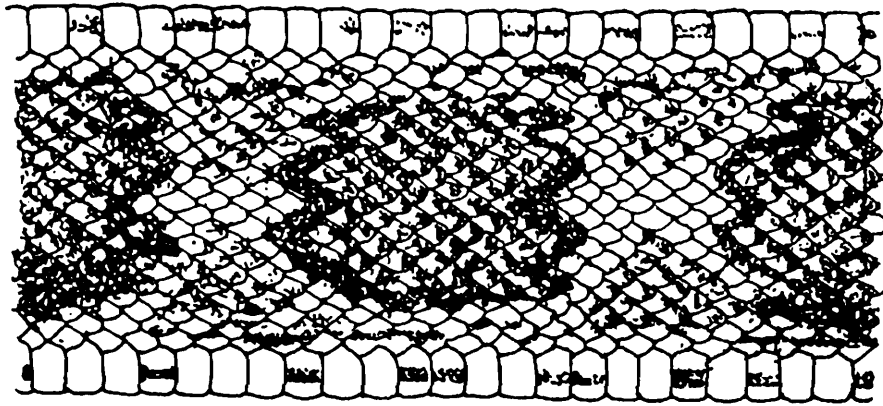


Fig. 86 Dorsal pattern of the body of *Oligodon splendidus*.

Rostral thick and prominent. Internasals 4. Prefrontals 4. Anterior temporals 2. Supralabial 8, the 4th and 5th touching the eye. A small subocular below the preocular. Anterior temporals 2. Scales in 21 rows. Ventrals 169-193, angulate laterally. Subcaudals 35-47. Anal 1. Hemipenis extends upto the 19th caudal plate, not forked, the proximal end is calyculate, the calyces gradually merge into a thin membranous longitudinally pleated area which contains two large spongy papilla-like processes of unequal length; hemipenis is devoid of spines.

*Distribution* : Burma : the valleys of the Irrawaddy and Chinwin between lat. 20° and 24°C.

*Status* : A common snake in its complete range.

### BLACK CROSS-BARRED KUKRI SNAKE

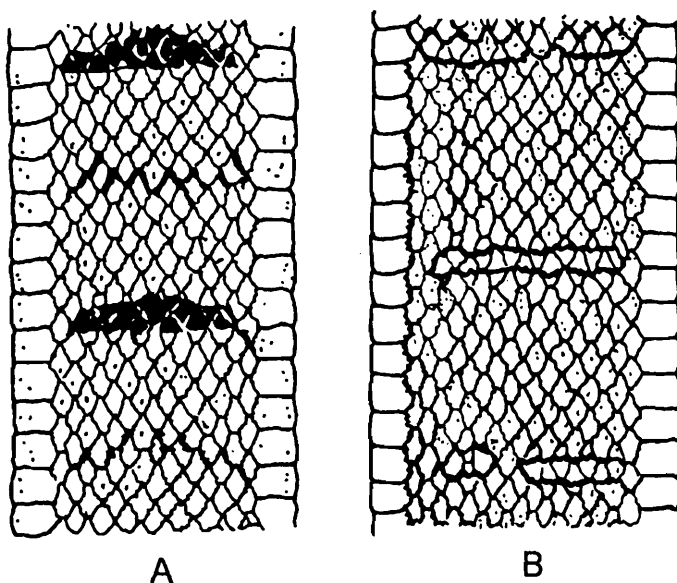
124. *Oligodon cinereus* (Gunther 1864)

(Text fig. 87)

1864. *Simotes cinereus* Gunther, *Rept. Brit. Ind.*, : 215 (Cambodia; London).

1943. *Oligodon cinereus*, Smith, *Fauna Brit. Ind.*, 3 : 215.

The maximum length reaches to 340 mm, tail 60 mm in males and 330 mm, tail 45 mm in females. Dorsal color is brown with or without dark or light brown cross-bars or reticulations. Belly unspotted or with markings. Head uniform brown above or with a dark nuchal chevron. Internasals in contact. Supralabials normally 8, the 4th and 5th touching the eye. A small presubocular below the preocular present or absent. Usually one anterior temporal. Scales in 17 rows. Ventrals 151-185, angulate laterally. Subcaudals 29-43. Anal 1. Hemipenis extends upto the 14th caudal plate, not forked; the proximal tip is calyculate, the calyces gradually merge into a thin membrane like longitudinally pleated area containing two large spongy papilla-like processes of unequal length; the organ is devoid of spines (Smith, 1935 and Pope, 1935).



**Fig. 87.** *Oligodon cinereus*. A. Dorsal pattern of the body of variety III. B. Dorsal pattern of the body of variety IV.

*Distribution* : India : Bengal, Assam.

*Elsewhere* : Burma, Thailand, Cambodia, Southern China and adjacent regions.

*Status* : A common snake in throughout its range.

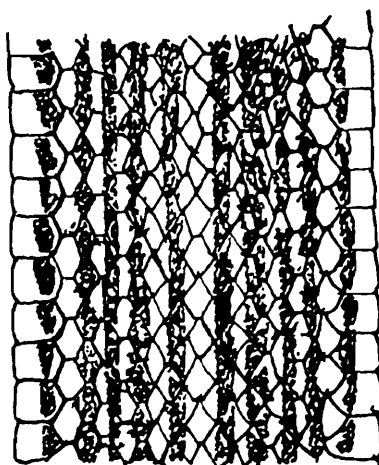
#### DARK-BROWN OR BLACKISH ANDAMAN KUKRI SNAKE

##### 125. *Oligodon woodmasoni* (Sclater 1891)

(Text fig. 88)

1891. *Simotes woodmasoni* Sclater, *J.A.S. Bengal*, 9 : 235, pl. 6 (Andaman and Nicobar Island., Calcutta).

1943. *Oligodon woodmasoni*, Smith, *Fauna Brit. Ind.*, 3 : 218.



**Fig. 88.** *Oligodon woodmasoni* (Sclater) Dorsal pattern of the body.

The maximum length reaches to 620 mm, tail 120 mm in males; the dorsal colouration is dark brown or blackish above, with 1 vertebral and 3 pairs of lateral narrow yellow longitudinal stripes. Ventrals whitish or yellowish, each with the central portion dark brown and with a dark spot at its outer edge. Head with the typical markings. Internasals in contact. Loreal present or absent. Supralabials 6, the 5th largest, the 3rd and 4th touching the eye or the 3rd prevented by a small presubocular. One anterior temporal. Scales in 17 rows. Ventrals 180-190, angulate laterally. Subcaudals 46-57. Anal 1. Hemipenis is devoid of spines and extends upto the 16th caudal plate and it is not forked; the maximum 2/3 of the organ is flounced, the folds are in a transverse arrangement towards the tip form calyces; on the distal side there are two large, spongy papilla like processes, one is nearly two times longer than the other (both the processes are enclosed in a calyculate sheath).

*Distribution* : The Andaman and Nicobar Islands.

*Status* : A rare species and is very closely allied to the Malaysian species, *Oligodon octoliniatus*.

#### 126. *Oligodon torquatus* (Boulenger 1888)

1888. *Simotes torquatus* Boulenger, *Ann. Mus. Civ. Genova*, (2) vi, : 597, pl. v, fig. 1. (Bharma : London).

1984. *Oligodon torquatus*, Mahendra, *Ann. Zool.*, 22 : 204.

*Total length* : Female 270 mm.; tail 30 mm.

Dorsal colour is Grey-brown above, with 2 vertebral and 2 lateral indistinct blackish longitudinal streaks or series of spots. Whitish below, with or without spots. Head sometimes with very indistinct markings and a broad dark bar on the nape.

Nasal undivided. Internasals in contact. Preocular 1. Postoculars 2. One Anterior temporal. Supralabials 7, the 3rd and 4th touching tye eye. Scales in 15 rows, reducing to 13 rows at two head-lengths before vent. Ventrals 144-169, feebly angulate laterally. Subcaudals 27-34. Anals 2. Hemipenis extends upto the 8th caudal plate, not forked; the proximal portion is longitudinally plicate and at the extremity are two spongy papilla like processes; the complete organ is devoid of spines.

*Distribution* : Valley of the Irrawaddy, Burma.

*Status* : Quite common.

#### LIGHT-BROWN ASSAM KUKRI SNAKE

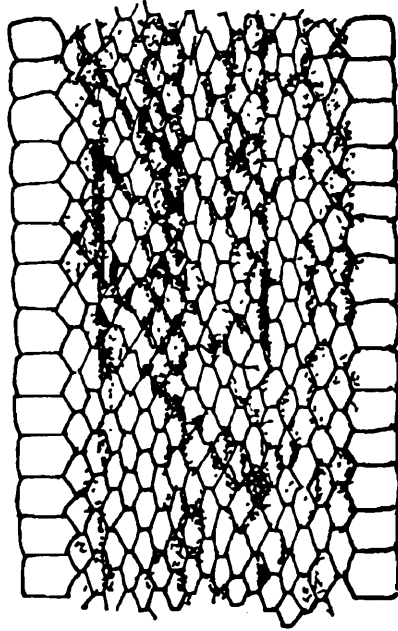
#### 127. *Oligodon theobaldi* (Gunther 1868)

(Text fig. 89)

1868. *Simotes theobaldi* Gunther, *Ann. Mag. Nat. Hist.*, (4)1 : 417 (Pegu; London).

1943. *Oligodon theobaldi*, Smith, *Fauna Brit. Ind.*, 3 : 220.

The maximum length reaches upto 390 mm, tail 47 mm, in females, not known in males. Color is brown above with 3 light longitudinal lines between which are narrow, closely set, transverse or angular bars. Yellowish below, with or without squarish black spots at the outer margins of the ventrals. Head with distinct typical markings. Internasals in contact. Loreal present. Preocular 1. Postoculars 2. Anterior temporal 1. Supralabials 7 or 8, the 3rd and 4th or 4th and 5th touching the eye. Scales in 17 rows. Ventrals 164-180, not angulate laterally. Subcaudals 30-47. Anals 2. Hemipenis is not known.



**Fig. 89.** *Oligodon theobaldi* (Gunther). Dorsal pattern of the body.

*Distribution* : Assam (Tura and Garo Hills), Hills of South India.

*Elsewhere* : Myanmar (as far north as Myitkyina and south to Mergui).

*Status* : A common snake in Burma (Myanmar), available in both the plain and hilly areas.

#### 128. *Oligodon cruentatus* (Gunther 1868)

1868. *Simotes cruentatus* Gunther, *Ann. Mag. Nat. Hist.*, (4)i, : 417 (Pegu : London).

1984. *Oligodon cruentatus*, Mahendra, *Ann. Zool.*, **22** : 205.

*Total length* : Male 355 mm; tail 55 mm; female 386 mm; tail 46 mm.

Dorsal colour is greyish-brown with or without 4 more or less distinct longitudinal stripes. Yellowish below, with squarish black spots on the ventrals. Tail in the young with 2 black annuli, one at the base and the other near the tip; in the adult these are confined to the under surface of the tail. Head in the young with a dark transverse mark behind and dark spots in front in the position of the typical pattern; in the adult they are almost or entirely lost.

Internasals in contact. Loreal usually present. Preocular 1. Postoculars 2. Anterior temporal 1. Supralabials normally 8, the 4th and 5th touching the eye. Scales in 17 rows. Ventrals 148-173, angulate laterally. Subcaudals 27-40. Anals 2. Hemipenis is as available in *theobaldi*, except that the spinose area is larger and the spines gradually increase in size as they approach the base of the organ.

*Distribution* : North India (Punjab).

*Status* : Available, but no where common.

*Elsewhere* : Burma.

### 129. *Oligodon planiceps* (Boulenger 1888)

1888. *Simotes planiceps* Boulenger, *Ann. Mus. Civ. Genova*, (2)vi, : 597, pl. v, fig. 2 (Minhla, Burma : Geneva).

1984. *Oligodon planiceps*, Mahendra, *Ann. Zool.*, **22** : 198.

*Total length* : Female 230 mm; tail 22 mm.

Color is brown above with an indistinct reticulation of darker markings. Yellowish below. Ventrals and subcauals with squarish black spots. A black cross-band on the occiput, behind the parietals. Upper lip yellow, with an oblique black streak below the eye, crossing the suture between the 3rd and 4th supralabials.

Rostral widely separating the internasals. No loreal. Supralabials 4 or 5, the 3rd touching the eye. Anterior temporal 1. Scales in 13 rows. Ventrals 132-142, angulate laterally. Subcaudals 22-27. Hemipenis not forked, spinose, with papillae.

*Distribution* : Lower Burma (Rangoon and Tharrawaddy district).

*Status* : A rare snake, known from 4 specimens only.

### WESTERN GHAT GRAYISH-BROWN LARGE-SPOTTED KUKRI SNAKE

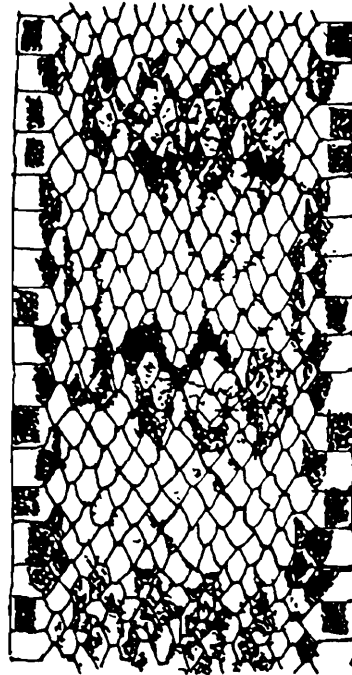
#### 130. *Oligodon venustus* (Jerdon 1853)

(Text fig. 90)

1853. *Xenodon venustus* Jerdon, *J.A.S. Bengal*, **22** : 528 (North Canara district; type lost).

1943. *Oligodon venustus*, Smith, *Fauna Brit. Ind.*, **3** : 222.

The maximum length reaches upto 490 mm, tail 65 mm in males; not known about females. Dorsal colouration is pale brown or grayish with a series of paired large oval or rhomboidal blackish spots edged with yellowish, which are usually united mesially; a large, more irregular spot below each dorsal spot. Head with the typical three markings (crescentic, oblique laterals and chevron). Under surface yellowish or whitish, with large black quadrilateral spots. Nasal divided. Internasals in contact. No loreal. Preocular 1. Postoculars 2. Anterior temporal 1. Supralabials 6 or 7, the 3rd and 4th touching the eye, the 6th frequently excluded from the labial border and taking the



**Fig. 90.** *Oligodon venustus* (Jerdon). Dorsal pattern of the body.

position of a lower anterior temporal. Scales in 17 rows. Ventrals 138-165, not angulate laterally. Subcaudals 27-36. Anals 2. Hemipenis is unforked and extends upto the 9th caudal plate; the distal 2/3 part of the organ is flounced; the transversely arranged flunces ultimately merge into a short spinose area proximally, the spines are coarse and closely set.

*Distribution* : Western Ghats, South of the Goa Gap; Wynaad; Nilgiri and Palni Hills, Cochin, Travancore.

*Status* : A common snake in throughout its range; a hill species, available in sufficient number between 5000-6000 feet in Nilgiri Hills.

#### WESTERN GHAT GRAYISH-BROWN SMALL-SPOTTED KUKRI SNAKE

##### 131. *Oligodon travancoricus* Beddome 1877

1877. *Oligodon tranvancoricus* Beddome, *P.Z.S.*, : 685 (S. Travancore Mts., London)

1943. *Oligodon tranvancoricus*, Smith, *Fauna Brit. Ind.*, 3 : 223.

The maximum length reaches to 450 mm, tail 65 mm in males. The dorsal colouration is "Grayish with 25 black, white-edged cross-bands on the body and five pairs of spots on the tail; three broad white-edged transverse bands on the head, viz., a frontal, an occipital, and a nuchal connected longitudinally on the median line; a small white spot in the middle between the parietals. Lower surface white with large square black spots" (Boulenger, 1890, p. 318). Nasal divided. Internasals in contact. No loreal; the posterior nasal forming a suture with the preocular. Preocular 1. Postoculars 2. Anterior temporal 1. Supralabials 7, the 3rd and 4th touching the eye,

the 6th excluded from the labial border. Scales in 17 rows. Ventrals 145. Subcaudals 37. Anals 2. Hemipenis extends upto the 11th caudal plate and it is forked for  $\frac{2}{5}$  of its length; proximal to the fork the hemipenis is with spine which are large and their size increases towards the base of the organ; distal to the fork the organ is smooth and bears 4 distinct longitudinal folds.

*Distribution* : Western Ghats, south of the Palghat Gap (High Range, Travancore, Tinnevely Hills).

*Status* : Commonly available.

### STREAKED KUKRI SNAKE

#### 132. *Oligodon taeniolatus* (Jerdon 1853)

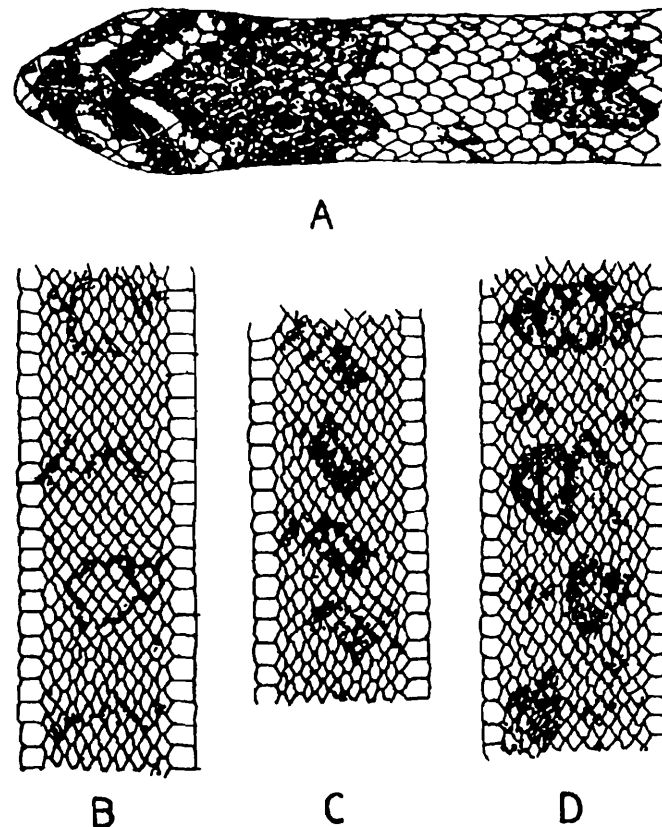
(Text fig. 91)

1853. *Coronella taeniolata* Jerdon, *Jour. Asiat. Soc. Bengal*, **22** : 528.

1943. *Oligodon taeniolatus*, Smith, *Fauna Brit. Ind.*, **3** : 223.

1966. *Oligodon taeniolatus*, Minton, *Bull. Am. Mus. Nat. Hist.*, **134** : 133-134.

This snake with slender body and uniform diameter from neck to vent never exceeds 650 mm. in length (including the tail), males are comparatively smaller than



**Fig. 91.** *Oligodon taeniolatus* (Jerdon). A. Dorsal pattern of the head and neck of variety IV. B. Dorsal pattern of the body of variety IV. C. Dorsal pattern of the body of variety II. D. Dorsal pattern of the body of variety V.

the females; head is slightly distinct from the neck; snout is blunt; rostral is large, its vertical length is more than its width, it extends posteriorly and separates the internasal shields; nostrils are located between the nasal shields; loreal is open; preocular one; postocular 2; anterior temporal one; supralabials 7, the 3rd and 4th touching the eye; scales at middle of body are in 15 rows, occasionally increasing to 17 rows in the anterior portion and decrease to 13 or 14 rows in posterior part; ventral shields are 158-218, feebly angulated laterally; subcaudal scales 29-56; anal shield is divided; hemipenis extends to the 11th caudal plate, forked and spinose, the spines are comparatively larger and increase in size gradually towards the base of the organ, distal to the forked portion the organ is smooth with 4 longitudinal folds. Dorsal colouration is quite variable and light brown; blackish brown or buff; with narrow cross bars or transverse spots which are rounded or longitudinally elongated; ventrum is yellowish or grayish, may or may not be spotted; a dark band across the head at level of eyes is present in most of the individuals; nape with W-shaped dark collar.

*Distribution* : India : Gujarat (Bhavnagar; Vadodara, Gandhinagar and Rajkot district); Peninsular India and Bihar.

*Elsewhere* : Sri Lanka and Pakistan.

*Habits and habitat* : The snake is nocturnal and found in varying habitats like clay, sandy desert; rocky areas of foot hills; gardens; in small bushes; under stones and wooden logs and hollow of trees. The main food of this snake seems to be reptile eggs and small lizards. Eggs are laid in late June.

*Status* : Common throughout its range.

#### RUSSET KUKRI SNAKE

#### 133. *Oligodon arnensis* (Shaw 1802)

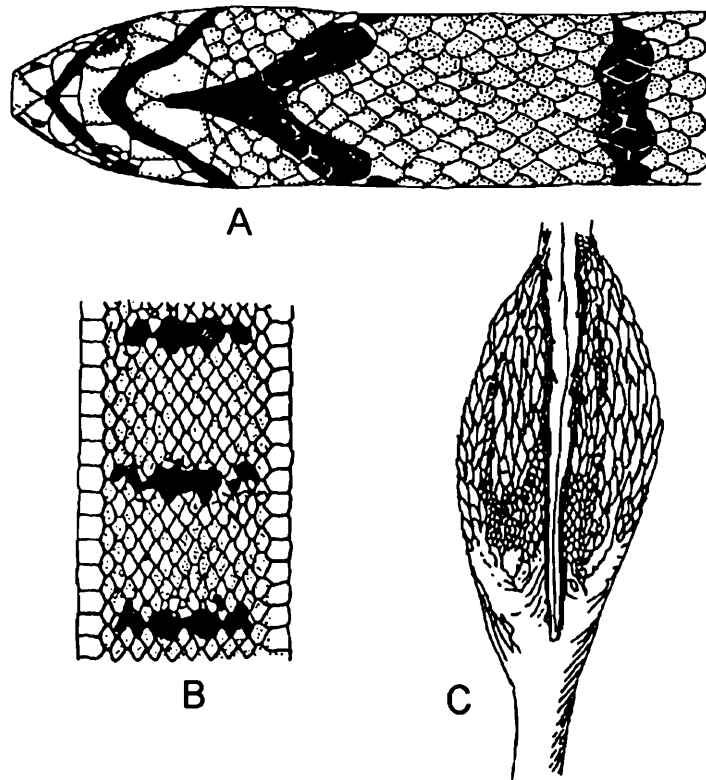
(Text fig. 92)

1802. *Coluber arnensis* Shaw, *Gen. zool.*, **3** : 526 (based on Russell's fig. 38, *Ind. Serp.*, **1** : 41 and 43, pls. 35 and 38, 1796).

1943. *Oligodon arnensis*, Smith, *Fauna Brit. Ind.*, **3** : 225.

1966. *Oligodon arnensis*, Minton, *Bull. Am. Mus. Nat. Hist.*, **134** : 134.

The length of the snake never exceeds 650 mm (tail is 10 mm.). Besides the characters already mentioned under the genus, the loreal in most species is generally united with the prefrontal shields; preocular is one; postoculars are two; anterior temporal one; supralabials 6 or 7, the 2nd and 3rd or the 4th touching the eye; dorsal body scales are in 17 rows; ventral shields are 164-202, angulate laterally; subcaudals are 40-59; anal shield is divided; hemipenis extends to the 8th caudal plate, not forked, it is covered with spines all over but the spines are comparatively smaller at the tip and these are more compact in this area; size of the spines increase gradually



**Fig. 92.** *Oligodon arnensis*. A. Dorsal pattern for the head and neck, B. Dorsal pattern of the body, C. Hemipenis.

towards the base of the hemipenis. Dorsal colouration is reddish-brown or purple, with distinct cross-bars or transversely arranged spots; ventrum is whitish, uniform or with faint lateral spots; head with 3 chevron shaped marks.

*Distribution* : Gujarat (Vadodara, Bharuch, Gandhinagar, Bhavnagar and Dangs districts); Peninsular India, Western Himalayas, Bengal.

*Elsewhere* : Sri Lanka, Pakistan, (Baluchistan, Sind, North West Frontier Provinces); Nepal.

*Habits and habitat* : It is most agile, diurnal snake, inhabiting the masonry work of old buildings and rocky areas around them; it is quite common in plains also. It is very shy and in the habit of concealing, when alarmed. Its food comprises insects, grubs, spiders, small reptiles and their eggs, amphibians, birds and their eggs, small rodents (mice); it is oviparous.

*Status* : Available in sufficient numbers throughout its range.

#### 134. *Oligodon sublineatus* (Dum, & Bibr. 1854)

1854. *Oligodon sublineatus* Dum., & Bibr., *Erp. Gen.* vii, : 57 (Ceylon; Paris).

1943. *Oligodon sublineatus*, Smith, *Fauna Brit. Ind. Rept.*, 3 : 327.

The maximum length in females reaches upto 350 mm, tail 40 mm. Dorsum is brown, the scales edged with black and white and with a series of dark brown, more or less rounded spots or narrow cross-bars, which may be paired or alternate with one another, they are best marked on the anterior part of the body; ventrum is yellowish with 3 longitudinal series of dark brown spots, the outer series often confluent with one another, the median may be absent; head with a dark crescent on the prefrontals passing through the eyes, a median elongated spot behind it and a large dark patch on each side of the neck. Supralabials are 7, third and fourth touch the eye; anterior temporal is 1; body scales in 15 rows; ventrals, 134-161, not angulated laterally; subcaudals, 23-37. Hemipenis extends upto the 14th caudal plate, forked near the tip; the complete organ bears spines which are almost of uniform size and arranged in a regular fashion.

*Distribution* : Sri Lanka : South Prvince (Galle); West Province (Colombo, Matagama, Veyangoda); Sabwa Province (Ratnapur and Yatiyantota district); Central Province (Peradeniya).

*Habits and habitat* : Inhabits low country, takes shelter in termite nests.

*Status* : Most common snake of Sri Lanka.

135. *Oligodon calamarius* (Linnaeus 1754)  
(Text fig. 93)

1754. *Coluber calamarius* Linnaeus, *Linn., Mus. Ad. Frid.*, : 23, pl. vi, fig. 3, and *Syst. Nat.* 10th Ed. 1758, p. 216 ("America" : Stockholm).

1943. *Oligodon calamarius*, Smith, *Fauna Brit. Ind.*, 3 : 228.

*Total length* : Male 250 mm., tail 38 mm.; female 350., tail 40 mm.

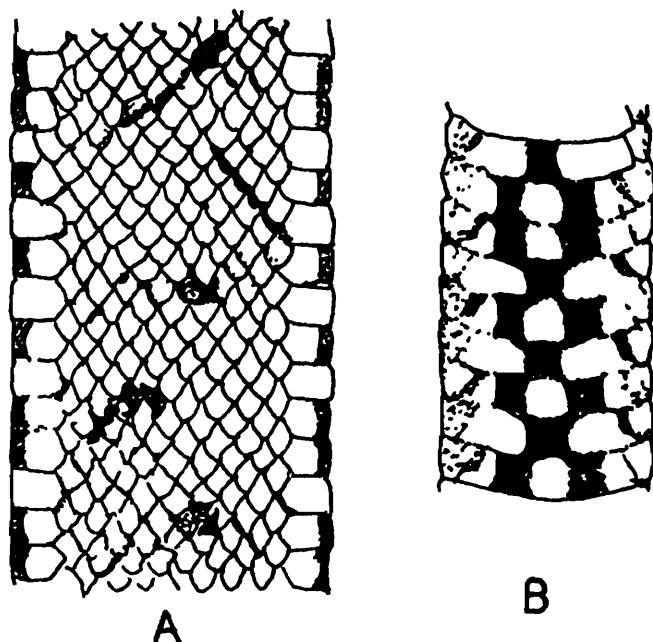


Fig. 93. *Oligodon calamarius*. A. Dorsal pattern of body, B. Ventral pattern of body.

Head with a dark crescent on the prefrontals passing through the eyes, a median elongate spot behind it and a large dark patch on each side of the neck. Ventrals 127-152, not angulate laterally. Subcaudals 20-34. Hemipenis extends upto the 10th caudal plate, not forked; the complete organ bears spines which are closely set and almost of uniform size.

*Distribution* : Sri Lanka (Udugama, Southern part); West Province (Hewissa, Matugama); Sab'wa Province (Ratnapura, Bulangoda); Central Province (Peradeniya).

### 136. *Oligodon erythrorhachis* Wall 1910

1910. *Oligodon erythrorhachis* Wall, *J. Bomb. N.H.S.*, **xix**, : 923, pl. (Namsang, Jaipur dist., Assam : London).

1943. *Oligodon erythrorhachis*, Smith, *Fauna Brit. Ind.*, **3** : 229.

The maximum length reaches to 370 mm, tail 62 mm in female. Dorsal colour is brown with a light (red in life) vertebral stripe and with 29 narrow, black, light-edged cross bars on the body and 7 on the tail. Yellowish below, with squarish black spots at the outer margins of the ventrals and subcaudals. Head with the typical markings, namely, a chevron across the prefrontals passing through the eyes, a broad oblique temporal stripe and a narrow chevron on the nape extending forwards to the prefrontal shields. No loreal. Internasals in contact. Anterior temporal 1. Supralabials 7, the 3rd and 4th touching the eye. Scales in 15 rows. Ventrals 154, not angulate laterally. Subcaudals 46. Anals 2. Hemipenis is not known.

*Distribution* : Assam (Namsang, Jaipur district).

*Status* : A rare snake, known only from the type specimen.

### BLACK KUKRI SNAKE

### 137. *Oligodon melaneus* Wall 1909

1909. *Oligodon melaneus* Wall, *J. Bombay N. H. S.*, **19** : 349, pl. (Tindharia, Darjeeling district; London and Bombay).

1943. *Oligodon melaneus*, Smith, *Fauna Brit. Ind.*, **3** : 229.

*Total length* : Female 300 mm, tail 45 mm male 330 mm, tail 55 mm. The maximum length reaches to 330 mm, tail 55 mm in males. The dorsal colouration is blackish-brown the scales finely speckled with lighter color and with an indistinct series of distant black vertebral spots. Dark plumbeous below. Head without the typical pattern, whitish below. Ventrals 152-160, not angulate laterally. Subcaudal 39-40. Hemipenis extends upto the 15th caudal plate; not forked and the complete organ bears spines of uniform side.

*Distribution* : West Bental (Darjeeling district).

*Status* : A rare snake, known only from two specimens.

## MALABAR BROWN KUKRI SNAKE

138. *Oligodon affinis* Gunther 1862

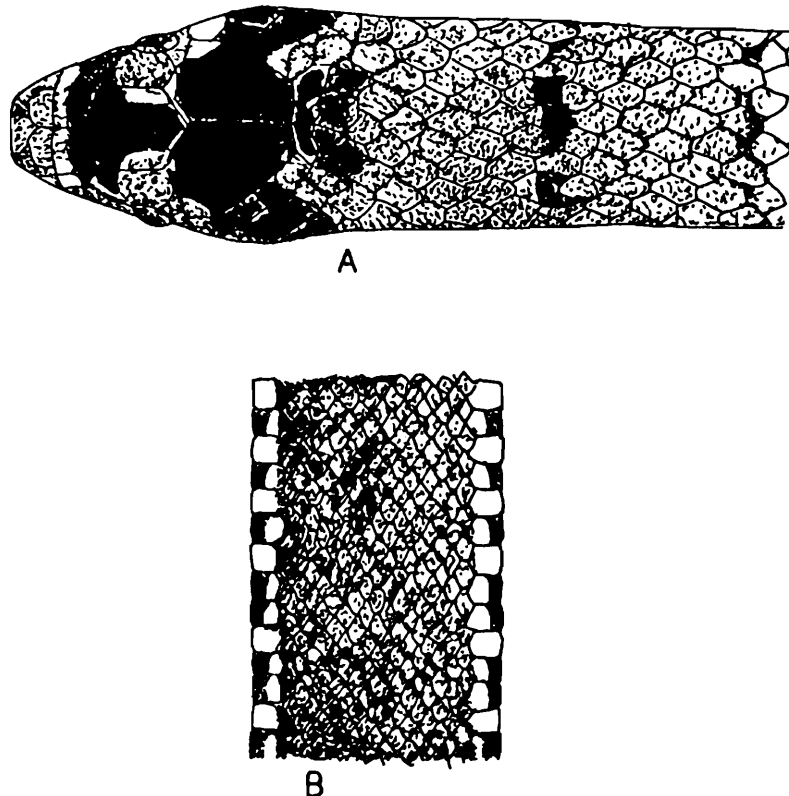
(Text fig. 94)

1862. *Oligodon affinis* Gunther, *Ann. Mag. Nat. Hist.*, (3)ix : 58 (Anamallaya; London).1943. *Oligodon affinis*, Smith, *Fauna Brit. Ind.*, 3 : 230.

The maximum length reaches to 340 mm, tail 50 mm. The dorsal colouration is brown and is with an indistinct reticulation of darker markings and narrow dark brown cross bars. Whitish below, with squarish black spots. Head with the crescentic, oblique lateral and chevron marks of the typical pattern over developed and connected to each other mesially by a broad stripe. Nasal divided. Internasals in contact. No loreal. Preocular 1, rarely 2 (vide Consable 1949, p. 132). Postoculars 2. Anterior temporal 1. Supralabials 7, the 3rd and 4th touching the eye. Scales in 17 rows. Ventrals 129-145, not angulate laterally. Subcaudals 23-37. Anals 2. Hemipenis is not forked, extends upto the 12th caudal plate and its distal part bears 4 longitudinal folds placed 2 on each side of the sulcus; the outer pair of the folds is segmented and bears minute spines; external to the folds there are flounces which also bear minute spines; the proximal part of the organ is entirely spinose.

*Distribution* : Western Ghats, south of the Goa Gap (Wynaad to Travancore).

*Status* : Not in abundance.



**Fig. 94.** *Oligodon affinis* Gunther. A. Dorsal pattern of head and neck, B. Ventral pattern of body.

ANAIMALAI BROWN KUKRI SNAKE  
139. *Oligodon brevicauda* Gunther 1862  
(Text fig. 95)

1862. *Oligodon brevicauda* Gunther, *Ann. Mag. Nat. Hist.*, (3)ix : 58 (Anamallaya, London).

1943. *Oligodon brevicauda*, Smith, *Fauna Brit. Ind.*, 3 : 231.

The maximum length reaches to 500 mm, tail is 55 mm in females. The color is brown above, with a light vertebral stripe bordered on each side by a dark brown or black band; a black narrow streak along each side; a rhomboidal dark spot on the frontal, confluent with a broad crescentic transverse band anteriorly, which passes through the eyes; a dark band from behind the eye to the angle of the mouth; a large dark nuchal spot. Lower surface red, with large quadrangular or transverse black spots. Tail without or with only a few black spots; maxillary teeth 7 or 8. Nasal divided. No internasals. Rostral in contact with and partly separating the prefrontals from each other. No loreal. Preocular 1, forming a suture with the posterior nasal. Postoculars 2. supralabials 7, the 3rd and 4th touching the eye. One anterior temporal. Scales in 15 rows, Ventrals 158-173, not angulate laterally. Subcaudals 25-29. Anals 2. Hemipenis is not known.

*Distribution* : Western Ghats, south of the Goa Gap (Nilgiri, Anaimalai and Travancore Hills).

*Status* : Available, but not in abundance.

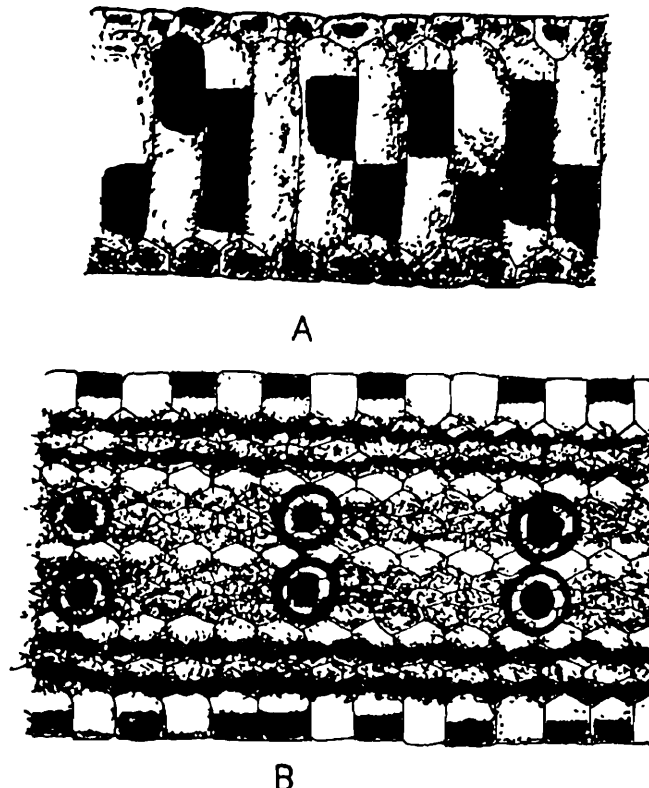


Fig. 95. *Oligodon brevicauda* Gunther. A. Dorsal pattern of body, B. Ventral pattern of body.

## RED-BELLIED KUKRI SNAKE

140. *Oligodon erythrogaster* Boulenger 1907

1907. *Oligodon erythrogaster* Boulenger, *Rec. Ind. Mus.*, I : 216 (Nagarkot, Nepal, 6000 ft., London).

1943. *Oligodon erythrogaster*, Smith, *Fauna Brit. Ind.*, 3 : 232.

The maximum length reaches to 450 mm., tail 75 mm. in females. Dorsal colouration is purplish-gray the scales edged with black; a light brown vertebral stripe bordered on either side by a grayish brown one, all edged with black. 4 other black stripes on the flanks. Whitish below (red in life); the outer margins of the ventrals and subcaudals with black spots, more or less confluent with one another. Head with the typical markings, except that there is an elongated spot behind the crescentic mark of the fore head and in front of the chevron nuchal mark. Internasals in contact. No loreal, the prefrontal in contact with the 2nd supralabial. Supralabials 7, the 3rd and 4th touching the eye. The 6th not reaching the labial border, is in the position of a lower anterior temporal. Scales in 17 rows. Ventrals 163-186, not angulate laterally. Subcaudals 42-60. Anals 2. Hemipenis not forked and extends upto the 29th caudal plate; at the extreme base there is a short area with thick, smooth, longitudinal folds; the remainder part of the penis has prominent flounces, transversely arranged and which are finest at the tip.

*Distribution* : The Eastern Himalayas, Nepal (Nagorkote) and Darjeeling district (Tindharia).

*Status* : A rare snake, known only from a few examples.

141. *Oligodon catenata* (Blyth 1854)

(Text fig. 96)

1854. *Calamaria catenata* Blyth, *J.A.S. Bengal*, xxiii : 287 (Assam : type lost).

1984. *Oligodon catenata*, Mahendra, *Ann. Zool.*, 22 : 197.

*Total length* : Male 565 mm, tail 75 mm; female 540 mm, tail 68 mm.

Dorsal colour is purplish grey or brown with four dark brown longitudinal stripes, the median pair separated by a yellowish-brown vertebral stripe, which may be either continuous (var. *herberti*) or formed by a confluence of elongated, black-edged spots (var. *eberhardti*).

Maxillary teeth 7 or 8.

No internasals. Rostral in contact with and partly separating the prefrontals from each other. Prefrontals very large, in contact with the 2nd supralabials. No loreal. Preocular 1, forming a suture with the posterior nasal. Postoculars 2. Supralabials 6, the 3rd and 4th touching the eye. Scales in 13 rows. Ventrals 186-212, not angulate laterally. Subcaudals 34-43. Anals 2. Hemipenis extends upto the 7th caudal plate,

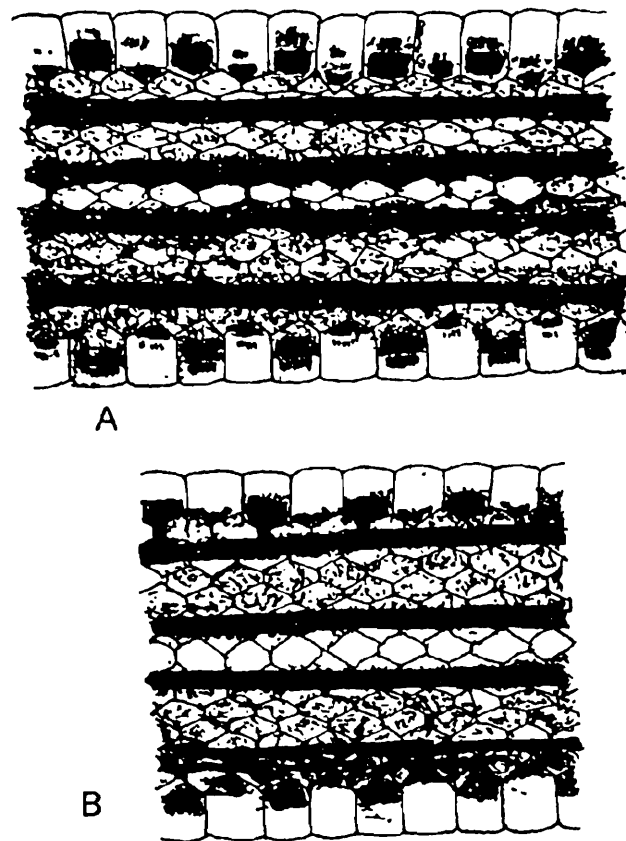


Fig. 96. *Oligodon catenata*. Dorsal pattern of body, A. Variety I, B. Variety II.

not forked, with numerous folds (longitudinally arranged) bearing small spines; proximally there is a small, entirely spinose area.

*Distribution* : Burma, Tong-King, Southern China and Cambodia.

*Status* : A common snake.

#### 142. *Oligodon mcdougalli* Wall 1905

1905. *Oligodon mcdougalli* Wall, *J. Bombay Nat. Hist. Soc.*, **xvi** : 251, fig (Sandoway, Burma : type lost).

1984. *Oligodon mcdougalli*, Mahendra, *Ann. Zool.*, **22** : 201.

Colour is dusky black, with a reddish-brown vertebral stripe from the nape to the tip of the tail, edged with small black spots. Black below. Tail with 2 black bars. Head blackish, with yellow markings on the snout and lips. Nape with an incomplete collar.

No loreal; the prefrontal in contact with the 2nd supralabial. Supralabials 7, the 3rd and 4th touching the eye. Scales in 13 rows. Ventrals 200, not angulate laterally. Subcaudals 39. Anals 2. Hemipenis is not known.

*Distribution* : Myanmar.

*Status* : A rare snake, known only from Wall's description of a type, which is lost.

143. *Oligodon dorsalis* (Gray & Hardwicke 1834)

1834. *Elaphe dorsalis* Gray & hardwicke, III. *Ind. Zool.* ii, pl. 85, fig. 1 (Chittagong; London).

1943. *Oligodon dorsaleis*, Smith, *Fauna Brit. Ind.*, 3 : 234.

The maximum length of the snake is 415 mm, tail is 80 mm in males. The dorsal colouration is dark brown to purplish with a yellowish vertebral streak edged with either black or black spots and with a black lateral streak. Below orange in life. Tail with 2 or 3 large black spots above, the first on the base, the others near the tip. Head with indications of the typical markings. Nasal divided. Internasals in contact. Loreal present. Preocular 1. Postocular 1. One anterior temporal. Supralabials 7, the 3rd and 4th touching the eye. Scales in 15 rows, reducing to 13 rows at two head-lengths before vent. Ventrals 162-188, not angulate laterally. Subcaudals 27-51. Anals 2. Hemipenis extends upto the 20th caudal plate, forked at the 14th plate; the major part of the organ has strongly developed flounces obliquely arranged; at the base of the penis there are a few large spines.

*Distribution* : Assam, Bengal.

*Elsewhere* : Myanamr.

*Status* : Available in throughout its range but is no where common.

144. *Oligodon hamptoni* Boulenger 1918

(Text fig. 97)

1915. *Oligodon hamptoni* Boulenger, *P.Z.S.*, : 9, fig. (Mogok, Burma : London).

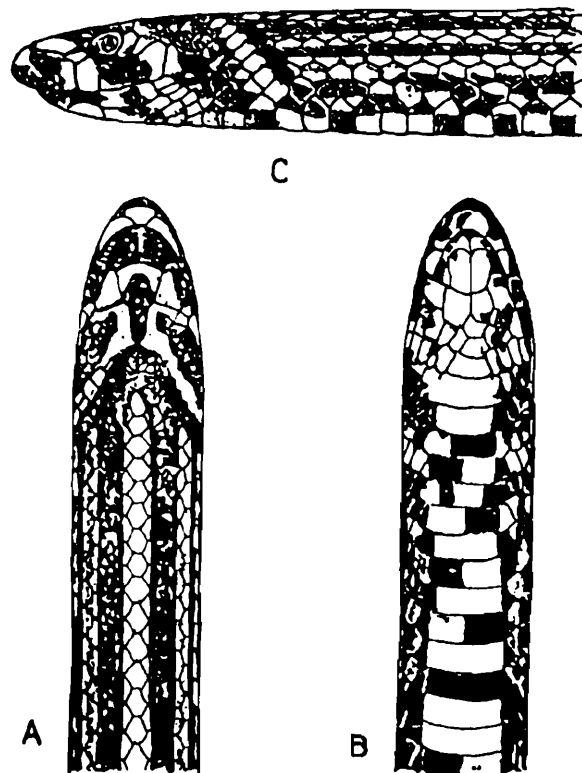
1984. *Oligodon hamptoni*, Mahendra, *Ann. Zool.*, 22 : 197.

*Total length* : Male 590 mm; tail 75 mm.

Dorsum with 5 longitudinal stripes : a broad yellow vertebral stripe from the nape to the end of the tail; a pair of dorsolateral reddish-brown, black-edged stripes and a pair of two narrower darkish lateral stripes. Head yellowish, with a dark crescentic band across the snout, an elongated median spot behind it, an oblique lateral stripe on either side of the elongated spot and a curved band on the nape continued into the lateral longitudinal lines of the back. Belly red, with black bars. Tail uniform red below.

Maxillary teeth 7 or 8.

No internasals. Rostral in contact with and partly separating the prefrontals from each other. Loreal very small or absent. Preocular 1. Postoculars 2. One anterior temporal. Supralabials 5, the 3rd and 4th touching the eye. Ventrals 160-175, angulate laterally. Subcaudals 30-32. Anals 2. Hemipenis extends upto the 11th caudal plat, not forked; the distal half is flounced, the folds being partly connected to form large calyees, the lips of which have small spines; the proximal area is spinose, the spines comparatively stout and of almost uniform size throughout.



**Fig. 97.** *Oligodon hamptoni*. A. Dorsal pattern of head and neck, B. Ventral pattern of head and neck, C. Lateral pattern of head and neck.

*Distribution* : Upper Myanmar. Mogok (Ruby mines); Sinlangaba (Bhamo district).

*Status* : Available but nowhere common.

### Genus 30. *Calamaria* Boie 1826

1826. *Calamaria* Boie, *Isis* : 981.

1943. *Calamaria*, Smith, *Fauna Brit. Ind.*, 3 : 236.

Body cylindrical; head not or scarcely distinct from the neck. Eye moderate, with round pupil. Nostril in a very small, undivided nasal, intercalated between the rostral, prefrontal and the first supralabial. The head shields are extremely deficient. There are no loreals, internasals and temporals, and the supralabials are reduced to four or five. In correlation with this numerical reduction, the remaining head shields are much enlarged. The top of the head is covered by a pair of large prefrontals, a frontal and two big parietals, besides an enlarged supraocular on each side. The parietals are in contact with supralabials. In most of the species a preocular is present, as also a postocular. Supralabials 4 or 5. Scales smooth, in 13 rows throughout, without apical pits. Ventrals rounded. Tail extremely short, the shortest in all the colubrid genera of the Indian subcontinent, being 1/20 or less of the entire length. Subcaudals paired. Maxillary teeth 8-11, equal, strongly curved. Palatine and pterygoid bones also with a continuous row of teeth similar to those on the maxilla.

This genus is represented by 60 or more species, ranging from Assam, Burma and Southern China to the Malay Archipelago, being especially abundant in Java, Sumatra and Borneo. They are usually found concealed under stones or fallen rotting trees. Their main diet is worms.

A single species, found in the Indian subcontinent.

#### FALSE WOLF SNAKE

#### 145. *Calamaria pavementata* Dum. & Bibr. 1854 (Text fig. 98)

1854. *Calamaria pavementata* Dum. & Bibr. *Erp. Gen.*, 7 : 71.

1943. *Calamaria pavementata*, Smith, *Fauna Brit. Ind.*, 3 : 238.

The maximum length reaches to 320 mm, tail 15 mm in males. The dorsal colouration is reddish brown, with dark longitudinal lines or series of spots. Nape with a broad dark brown bar, bordered with yellow behind and usually in front also. Belly uniform yellow or the ventrals edged with brown. Two yellow spots at the base of the tail and two near the tip. Rostral is visible from above, much broader than high; frontal longer than broad, shorter than the parietals, 2 to 2.5 times as broad as the supraocular. Preocular 1. Postocular 1. Supralabials 4, the 2nd and 4th longest, the 2nd and 3rd touching the eye. First pair of infralabials forming a suture behind the mental. Two pairs of subcaudals 10-27 paired. Anal 1. Hemipenis extends upto the 7th or 8th caudal plate deeply forked and is without the spines; the proximal portion of the forked portion is smooth but calyculate beyond; the calyces are pocket like in shape and uniform in size; the edges are not scalloped; a broad longitudinal fold extends from the point of forking to the tip of the organ; the lips of the sulcus are smooth and distinct.

*Distribution* : India : Meghalaya (Garo Hills), Assam (Tura and Chin Hills).

*Elsewhere* : Myanmar; Indo Chinese region; southern China; Java; the Malaya Peninsula.

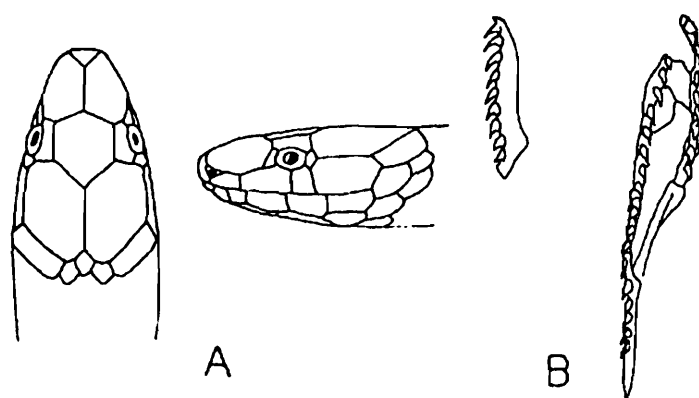
*Status* : A hill species, found in throughout its range but no where common.

#### Genus 31. *Dendrelaphis* Boulenger 1890

1890. *Dendrelaphis* Boulenger, *Fauna Brit. Ind.*, 3 : 339 (type *caudolineatus*).

1943. *Ahaetulla*, Smith, *Fauna Brit. Ind.*, 3 : 239.

This genus includes Bronze Backs, which are arboreal and terrestrial snakes inhabiting mainly the oriental region and range extends upto Eastern Australia. Many species are well established in south-east Asia and Indonesia. Seven species are known from India, one *Dendrelaphis tristis* is available in Gujarat. The genus is characterized by having 18-34 maxillary teeth, the posterior ones are slightly larger



**Fig. 98.** *Calamaria pavimentata*. A. Dorsal and lateral view of head, B. Maxilla and palatamaxillary arch of *O. uniforms*.

or smaller than the others; posterior aspect of vertebrae is devoid of hypapophysis; body is elongated, slightly compressed; head is distinct from the neck, which is quite slender and elongate; eyes are large, with round pupil; loreal region more or less concave; body scales are smooth, in 13 or 15 rows, arranged in an oblique fashion, outer row of dorsals is narrow in comparison to the other scales, with single apical pit; vertebral scales are slightly enlarged; ventral shields are enlarged, with a suture like lateral keel and a notch on each side, corresponding to the keel; tail is quite long; subcaudal shields are paired and keeled.

#### Key to the species of Genus *Dendrelaphis*

##### I. Scales in 13 rows at mid-body

A. Ventrals 149 to 175; vertebral scales not enlarged, at mid-body narrower than the lowest coastran scales..... *D. caudolineolatus*

B. Ventrals 187-199; vertebral scales strongly enlarged, at mid-body broader than the outer row of scales ..... *D. gorei*

##### II. Scales in 15 rows at mid-body

A. No loreal; three supralabials touching the eye .....*D. oliveri*

B. Two loreals, one behind the other; two or three supralabials touching the eye ..... *D. bifrenalis*

##### C. One loreal.

a. One long supralabial touching the eye..... *D. subocularis*

b. Two or three supralabials touching the eye.

1. Eye very large, as long as its distance from the rostral shield; no black temporal stripe; no lateral stripes on the body; tail with 3 black lines.....*D. grandoculis*

2. Eye as long as the distance between it and the nostril; a more or less distinct temporal stripe; a light lateral band on the body.
- i. Vertebral row of scales starting directly behind the distal end of the parietal suture and then gradually enlarged; posterior maxillary teeth usually shorter than the others; the 5th and 6th supralabials touching the eye ..... *D. tristis*
- ii. Vertebral row of single enlarged scales starting much behind the posterior border of the parietals and abruptly enlarged, seemingly by the fusion of two nuchal scales; posterior maxillary teeth longer than the other; the 4th supralabial slightly, and the 5 and 6th completely touching the eye ..... *pictus*

### PAINTED BRONZE-BACK

#### 146. *Dendrelaphis pictus* (Gmelin 1789)

(Text figs., 99, 100 & 101)

1789. *Coluber pictus* Gmelin Syst. Nat., i, p. 1116 (no type loc. given) *Dendrophis pictus* Boie, Isis, 1827, p. 530 (Java).

1871. *Dendrophis pictus andamanensis* (Anderson) P.Z.S., : 184 (Andamans; Calcutta).

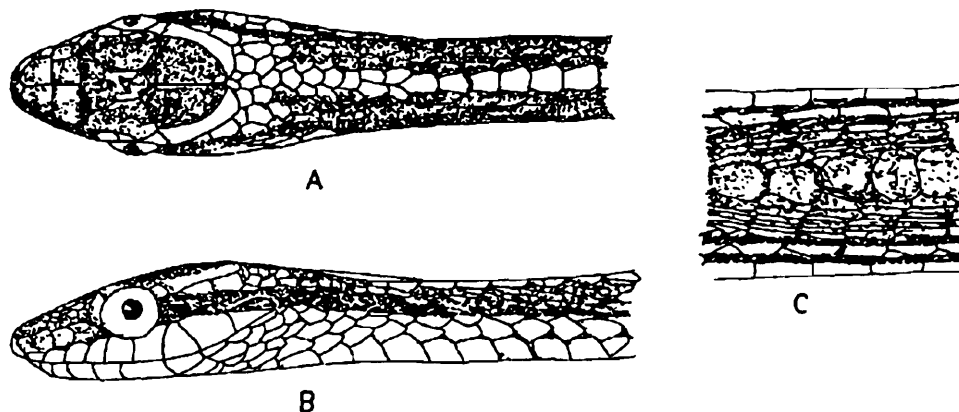
1943. *Ahaetulla ahaetulla*, Smith, Fauna Brit. Ind., 3 : 24.

The maximum length reaches upto 1100 mm., tail 365 mm. in males and 1220 mm. tail 400 mm. in females. Two colour varieties have been described.

#### 1. *Dendrelaphis pictus pictus* (Gmelin)

Dorsum is bronze-brown; ventrum is creamy white, yellowish, greenish or bluish. A yellow or cream-coloured, black-bordered stripe on the flank along scale-rows 1 and 2. Head is with a black stripe running along the temple on to the neck, where it break up into oblique bars. Upper lip and lower jaw yellow or white. In certain cases, the markings are reduced the yellow flank stripe is absent or merely indicated and the black stripe reduced to spots edging the scales.

*Distribution* : Southern India.



**Fig. 99.** *Dendrelaphis pictus*. A. Dorsal pattern of head and body, B. Lateral pattern of head and body, C. Dorsal pattern of body.

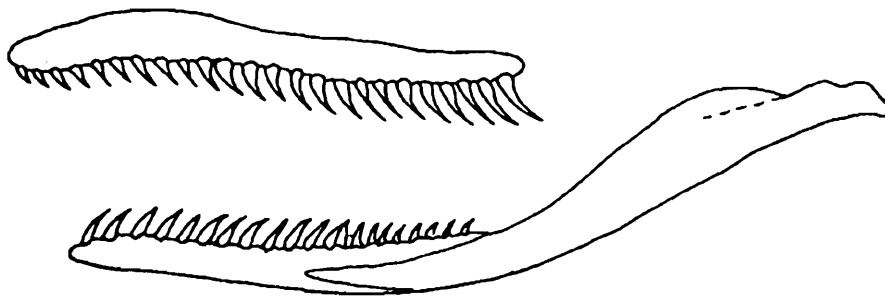


Fig. 100. *Dendrelaphis pictus*, Maxilla and mandible.

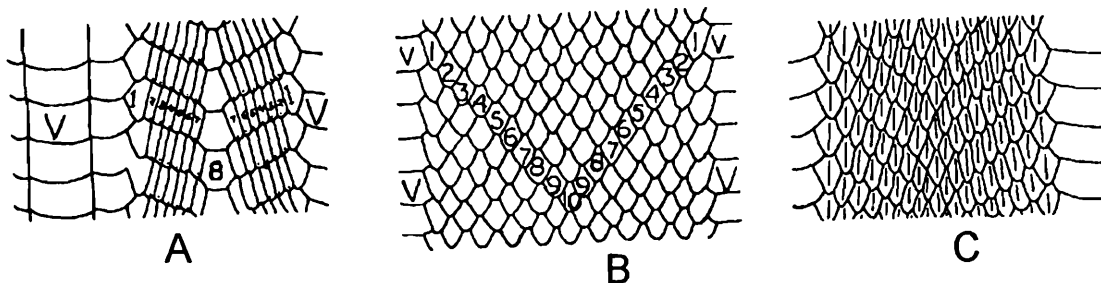


Fig. 101. Scaling of the body of A. *Dendrelaphis pictus* showing enlarged vertebral scales (8), the apical pits on the oblique dorsal scales, and the lateral keel of the ventral scales (v). B. *Elaphe radiata*, showing normal scales. C. *Pseudoxenodon macrops*, showing oblique scales.

## 2. *Dendrelaphis pictus andamanensis* (Anderson)

Dorsum is bronzy olive or greenish, sometimes reddish; lower parts greenish yellow. All the dorsals and the outer margins of the ventrals heavily edged with black. A black stripe along the side of the head, passing on to the neck.

*Distribution* : The Andamans.

*Habits and habitat* : It is strongly arboreal and diurnal snake inhabiting plains and foothills with plenty of vegetation. It is a most docile species and is very shy and gentle in disposition. Its food comprises mainly the frogs, commonly available in fields.

*Status* : Common throughout its range.

*Main characters* : Maxillary teeth 19 to 28, the posterior largest. Loreal 1. Supralabials 9, rarely 8, the 4th just and the 5th and 6th completely touching the eye. Vertebral scales enlarged, variable in breadth. The vertebral row of single enlarged scales starts not immediately behind the posterior border of the parietals, but at a far distance from it, being preceded by several smaller scales and some paired ones. These scales are abruptly enlarged as compared with the preceding ones. Costal scales in 15 : 15 : 11 or 9 rows. Ventrals 163-211. Subcaudals 122-174. Anals 2.

Hemipenis is quite long and undivided reaching upto the 24th caudal plate; it is longitudinally plicate, the folds are with minute spines except at the extreme base, where are a few larger and coarser spines; sulcus lips are very prominent; two transverse folds across the middle of the hemipenis which start from the mid portion and extend up half way across it.

#### OLIVE BRONZE-BACK

##### 147. *Dendrelaphis cyanochloris* (Wall 1921)

1921. *Dendrophis pictus* var. *cyanochloris*, *Rec. Ind. Mus.* **22** : 155 (Mergui, Tenasserim; London).

1943. *Ahaetulla cyanochloris*, Smith, *Fauna Brit. Ind.*, **3** : 244.

The maximum length of the species has been recorded in females, which never exceeds 1330 mm, tail 405 mm. The dorsal colour is bronzy olive, the scales black-edged; ventrals and outer scale-rows pale greenish or yellowish. Usually no black flank stripe. A broad black temporal stripe extending on to the neck and forebody, where it may be broken up into spots. Lips and lower jaw yellowish. Maxillary teeth are 21-24, poster ones are largest; snout is broad; eyes are large, as long as their distance from the middle or the anterior border, of the nostril, internasals are as long as, or a little longer than, the prefrontals; temporals 1+2 or 2+2; supralabials 9, rarely 8 or 10, fourth just touching, fifth and sixth are below the eye; vertebral scales are strongly enlarged at mid-body, broader than the outer row of scales, the posterior margin truncate or concave; body scales in 15 : 15 : 11 or 9 rows; ventrals 186-211; subcaudals 135-159; anals 2. Hemipenis not forked, very long and extends upto the 21st caudal plate; longitudinally plicate, the folds are linked to each other at regular intervals so as to enclose diamond shaped spaces (calyces); they are provided with minute spines; the basal portion of the organ is sharply marked off from the calyculate area by an oblique fold of tissue and has only large course spines.

*Distribution* : Bengal (Darjeeling district); Assam north to the Thandaung Hills; Upper Burma (Htingnan in the Triangle); Tenasserim; Thailand in the north-west; the Andaman and Nicobar Islands.

*Status* : Available in throughout its range but not in abundance.

#### NILGIRI OLIVE-BROWN BLACK-BLOTCHED SNAKE

##### 148. *Dendrelaphis grandoculis* (Boulenger 1890)

1890. *Dendrophis grandocules* Boulenger *F.B.I.*, : 337 (Tinnevely Hilly & Coonoor Ghat, S. India; London).

1943. *Ahaetulla grandoculis*, Smith, *Fanua Brit. Ind.*, **3** : 245.

The maximum length in females reaches upto 1280 mm, tail 350 mm, nothing is known about males. The dorsal colouration is olive-brown with small, black, irregularly distributed blotches. Eye bordered with whitish. No black temporal stripe. No lateral

stripes on the body. Lower parts olive, darker behind than in front, with or without small black spots on the sides. Three black lines along the tail, one on each side and one below. Maxillary teeth 31 to 33, the posterior longest. Eye very large, as long as its distance from the rostral shield. Loreal 1. Supralabials 9, the 4th just touching, the 5th and 6th below and in full contact with the eye. Vertebral scales feebly enlarged, at mid-body not broader than the outer row of scales. Scales in 15 : 15 : 11 or 9 rows. Ventrals 167-189. Subcaudals 117-124. Anals 2. Hemipenis is not known.

*Distribution* : The Western Ghats, south of lat 15° (travancore, Tinnevely, Nilgiri Hills, Wynaad).

*Status* : A rare species.

#### EASTERN HIMALAYAN BRONZE-BROWN SNAKE

##### 149. *Dendrelaphis gorei* (Wall 1910)

1910. *Dendrelaphis gorei* Wall, *J. Bombay N.H.S.*, 19 : 829, pl. figs. 1-3 (Jaipur, Naga Hills, Assam; London).

1943. *Dendrelaphis gorei*, Smith, *Fauna Brit. Ind.*, 3 : 246.

The maximum length of the snake reaches upto 900 mm, tail 320 mm in females; not known about males. Dorsal colouration is bronze-brown, greenish or grayish below. A more or less distinct yellowish stripe along scale rows 1 and 2. A black stripe along each side of the head, extending on to the neck, where it breaks up into vertical bars. Lips and chin yellowish. Maxillary teeth 22 to 25, the posterior largest. Loreal 1. Subralabials 8 or 9, the 4th and 5th or the 5th and 6th touching the eye. Vertebral scales strongly enlarged, at mid-body broader than the outer row of scales. Scales in 13 : 13 : 11 or 9 rows. Ventrals 187-199. Subcaudals 139-154. Anals 2. Hemipenis is not forked, extends upto 8th caudal plate; at about middle of penis and besides the sulcus there is a prominent tongue-like part of tissue, from which two sinous folds extend forwards; the area distal to the fold is calyculate, that proximal to it is with spines, except the base of the organ, which is plicate.

*Distribution* : The Eastern Himalayas (Darjeeling), Burma (Toungyi) and Tong-King, Assam north of Abor country; Naga Hills.

*Status* : A rare snake.

#### TRAVANCORE BRONZE-BROWN SNAKE

##### 150. *Dendrelaphis bifrenalis* (Boulenger 1890)

1890. *Dendrophis bifrenalis* Boulenger, *F.B.I.*, : 338 (Ceylon; London).

1943. *Ahaetulla bifrenalis*, Smith, *Fauna Brit. Ind.*, 3 : 246.

The maximum length reaches upto the 1030 mm, tail 380 mm, not recorded in males. Dorsal colouration is bronze brown or gray with a greenish yellow line along the outer row of scales. Head with a black lateral stripe, passing on to the neck,

where it breaks up into oblique bars. Upper lip and chin yellowish. Ventrals and subcaudals between the lateral keels greenish yellow, outside the keels brownish or bluish. Maxillary teeth 20 to 25, the posterior longest. Loreals 2, one behind the other. Supralabials 9, the 4th, 5th and 6th or the 5th and 6th touching the eye. Vertebrals strongly enlarged broader than the outer row of scales at mid-body. Scales in 15 : 15 : 11 or 9 rows. Ventrals 154-176. Subcaudals 144-175. Anals 2. Hemipenis is not known.

*Distribution* : Ceylong; southern India (Trivandrum, Travancore).

*Status* : Available but not so common.

#### TRAVANCORE BRONZE-OLIVE SNAKE

##### 151. *Dendrelaphis caudolineolata* (Gunther 1869)

1869. *Dendrelaphis caudolineolatus* Gunther, *P.Z.S.*, : 506, pl. 11, fig. 1 (Ceylon, London).

1943. *Ahaetulla caudolineolata*, Smith, *Fauna Brit. Ind.*

The maximum length in males reaches upto 650 mm, tail 235 mm and 870 mm, tail not known in females. The dorsal colouration is bronze-olive with a narrow black temporal line and few oblique black streaks anteriorly. Labials and throat yellowish. Lower surface pale greenish or grayish. Tail with two black lateral lines on each side. Maxillary teeth 28 to 32, the posterior largest. Loreal 1, supralabials 8 or 9, the 4th and 5th, or the 5th and 6th touching the eye. Vertebral scales not enlarged, at mid-body narrower than the outer row of scales. Scales in 13 : 13 : 9 rows. Ventrals 149-175. Subcaudals 119-129. Anals 1. Hemipenis is similar to *D. gorei* and *D. tristis*.

*Distribution* : Ceylon, Southern India (Ramnad, Travancore).

*Status* : A rare hill species.

#### COMMON BRONZE-BACK TREE SNAKE

##### 152. *Dendrelaphis tristis* (Daudin 1803)

1803. *Coluþer tristis* Daudin, *Hist. Nat. Rept.*, 6 : 430 (based on Russell's pl. 31).

1943. *Ahaetulla tristis*, Smith, *Fauna Brit. Ind.*, 3 : 248.

The common Bronze-back reaches to a maximum length of 1700 mm., females are larger than the males. Main characters are : Body elongated, head distinct from neck; eyes are large with round pupil; maxillary teeth are 17-22, the posterior ones are generally shorter than the others; loreal is one; supralabials 9, the 5th and 6th touching the eye; vertebral scales are feebly enlarged, slightly narrower than the outer scales; the vertebral row of scales commences from the hinder border of parietal shield and as the row extends posteriorly the scales become larger; body scales are in 15 : 15 : 11 or 9 rows; ventral shields are 163-205; subcaudals, 105-150; anal shield is divided; hemipenis extends upto the 8th caudal plate, undivided. Dorsal colouration is bronzy, brownish or purple-brown; ventrum is greenish, yellowish or grayish; each

lateral aspect is with a buff or yellowish band, covering the two outer scale rows; head is with a feeble black temporal stripe, which extends on to the neck, where it is generally breaks up into vertical bars; upper lip is yellow; in many individuals the eyes are with a yellowish border and vertebral scales of the neck and anterior dorsum are having yellowish tinge.

*Distribution* : India : Gujarat ( Rajkot, Junagarh, Vadodara and Bhavnagar districts). Peninsular India, West Bengal (Darjeeling).

*Elsewhere* : Sri Lanka, Pakistan (Sind).

*Habits and habitat* : It is most agile, strong climber, shy, timid, diurnal, arboreal species, living in bushes and on trees. It descends on the ground only to capture the food, which consists of frogs, toads, small lizards, small birds and their eggs and insects. It lays 3-5 elongated eggs.

*Status* : This species has become vulnerable on account of habitat destruction.

### 153. *Dendrelaphis subocularis* (Boulenger 1888)

1888. *Dendrophis subocular* Boulenger, Ann. Mus. Civ. Genova, (2)vi : 600, pl. vi, fig.2 (Bhamo, Upper Burma : London and Genoa).

1943. *Dendrelaphis subocularis*, Smith, *Fauna of Brit. Ind.*, 3 : 249.

*Total length* : Female 880 mm; tail 250 mm.

Colour is bronze above, ending abruptly along the middle of scale row 2; rest of the lower parts white or greenish-white. A pale brown lateral stripe adjacent to the ventral shields present or absent. Head with a dark lateral stripe passing on to the neck where it may break up into vertical bars. Vertebral scales on the neck and fore part of the body sometimes yellowish.

Maxillary teeth 21 to 23, the posterior smallest. Loreal 1. Supralabials 7 or 8, only one long supralabial touching the eye with 3 or 4 anterior and 3 posterior to it. Vertebral scales feebly enlarged, much narrower than the outer row of scales. Scales in 15 : 15 : 11 or 9 rows. Ventrals 153-188. Subcaudals 74-105. Anals 2. Hemipenis extends upto the 10th caudal plate, undivided and spinose throughout, the spines in the middle of the organ are largest; the proximal end is plicate; starting a short distance behind the tip and extending for about half the length of the organ beside the sulcus, there is a thick fold or tongue of tissue.

*Distribution* : Myanmar (Bhamo), Thailand and South Anam.

*Status* : Available in sufficient number.

### 154. *Dendrelaphis oliveri* (Taylor 1950)

1950. *Ahaetulla oliveri* Taylor, *Univ. Kansas Sci Bull.*, xxxiii, pl. 2, no. 14 : 555 (type in Kansas Museum).

1984. *Dendrelaphis oliveri*, Mahendra, *Ann. Zool.*, **22** : 255.

The maximum length reaches upto 756 mm; tail 250 mm.

Colour is bronze grey above; belly cream white (in life). Head with a lateral black stripe extending through the eye to the base of the tail. A white line, outlined in black, beginning on the supralabials, runs along on the 1st and 2nd scale rows upto the base of the tail. Tail uniform bronzy grey.

Loreal absent. Supralabials 9, the 4th, 5th and 6th entering the eye. Vertebral scales enlarged, smaller than the scales of the outer row. Scales in 15 rows. Ventrals 173. Subcaudals 134, divided. Anals 2.

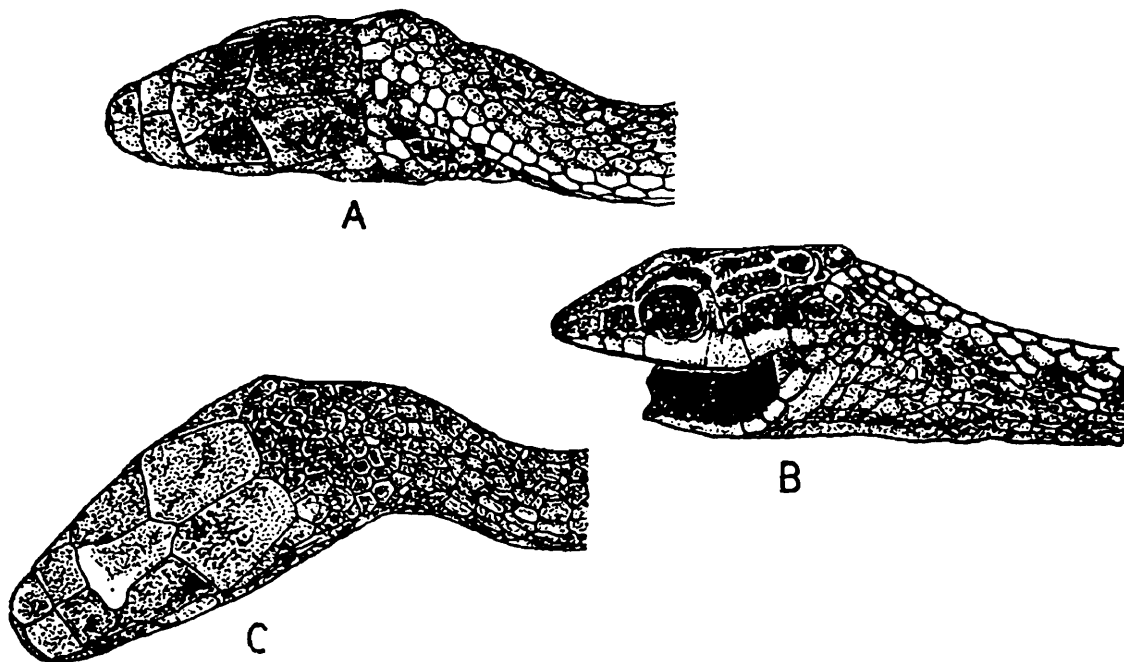
*Distribution* : Trincomalee (about 20 km. north of Trincomalee), Sri Lanka.

*Status* : Very rare, known only from the holotype.

155. *Dendrelaphis humayuni* Tiwari & Biswas 1973  
(Text fig. 102)

1973. *Dendrelaphis humayuni* Tiwari & Biswas, *J. Zool. Soc. India*, **25**(1&2) : 59-63.

The maximum length of this snake reaches upto 830 mm, tail 400 mm, dorsal colouration is black with a bluish tinge; upper lips are bluish-white; chin and throat are white; a short faint stripe emerges from the nostrils and continues on the fore part of the body, it is quite faint and hardly distinguishable because of the similar colour pattern of head and body; ventrum is bluish white. Maxillary teeth over 22,



**Fig. 102.** *Dendrelaphis humayuni* Tiwari and Biswas, A. Dorsal pattern of head and neck, B. Lateral pattern of head and neck in paratype, C. Dorsal pattern of head and neck in holotype.

posterior ones are longer; eye is large, its diameter is slightly less than its distance from nostril or anterior margin of the nostril, pupil is round; snout is broad somewhat square; rostral twice or slightly less than twice as broad as deep; internasal is as long as prefrontal; frontal shield is one and a half times as long as its anterior breadth, slightly longer than its distance from end of snout and shorter than parietal; loreal is elongate; preocular 1; postocular 2; temporals 2 + 2; supralabials 9, fifth and sixth touch the eye and postocular, 6th one is the largest; infralabials 10, five are in contact with the anterior genials; anterior genial is much shorter than the posterior one; 6th infralabial is longest; body scales are in 15 : 13-15 : 9-10-11 rows, vertebral scales are enlarged, broader than the outer row of scales, posterior margin truncate; ventrals 172-178; subcaudals 138-148; anals 2. Hemipenis is undivided, not very long, reaches upto the 10th caudal plate; with long curved spines in the middle of the organ.

*Distribution* : India : Great Nicobar Island (Galathea Bay, Campbell Bay); Nicobar Islands (Camorta). The species seems to be confined to the Nicobar group of Islands.

*Habits and habitat* : A diurnal arboreal snake, most agile and feeds on lizards.

### Genus 32. *Chrysopelea* Boie 1826

1826. *Chrysopelea* Boie, *Furuss. Bull. Sci. Nat.*, 9 : 237 (type *Coluber ornatus*).

1943. *Chrysopelea*, Smith, *Fanua Brit. Ind.*, 3 : 250.

This genus includes slender bodied snakes in which head is quite distinct from the neck; head is flat and obtusely pointed anteriorly, nasals are divided and bear large nostrils; eyes are large, with round pupil; supralabials are 9-10, 4th-6th or 5th-6th or 5th-7th touch the eye; body scales are smooth or feebly keeled, with epical pits, usually in 17 rows, in certain individuals 15 or 18-19 oblique rows are also present; ventral and subcaudal shields are with a suture like lateral keel and a notch on each side corresponding to the keel; the last and in rare cases the penultimate ventral shield is divided; anal and subcaudal shields are divided; posterior dorsal aspect of vertebra is provided with or devoid of hypapophysis. The genus includes 5 species, four are available in Indian region.

### Key to the species of genus *Chrysopelea*

- I. Median 3-5 rows of dorsal scales distinctly keeled; last ventral always undivided; dorsum olive brown, with black cross-bars ..... *C. taprobanica*
- II. Median dorsal scales smooth or very faintly keeled; last ventral almost always divided.
  - A. Ventrals 181-201; venter between the keels olive to darkish gray, in sharp contrast to the yellow or white of the ventral edges; dorsum with black paired cross-bands ..... *C. pelias*

- B. Ventrals more than 197; coloration of the belly between the keels not in sharp contrast to that of the ventral margins.
1. Laterally situated dorsal scales pale, each with a black median streak ..... *C. ornata*
  2. Dorsal scales black or pale, almost always without a black median streak, but frequently with a light middle spot ..... *C. paradisi*

### GOLDEN TREE SNAKE

#### 156. *Chrysopelea ornata* (Shaw 1802) (Text fig. 103 & 104)

1801. *Indian Serp.*, 2 : 4, pl. 2 "Kalla Jin"

1943. *Chrysopelea ornata*, Smith, *Fauna Brit. Ind.*, 3 : 251.

The total length of golden tree snake reaches upto 1100 mm; body elongate; head distinct from the neck; eyes are large with round pupil; tail very long; body scales are feebly keeled, outer most rows are smooth and with apical pits, in 15 : 17 : 14 rows; upper labials are 10, 4th to 6th touching the eye; loreal is one; one pre and two post oculars are present; temporals are 2+2; ventral shields are 207-230; subcaudal shields are 118-138; anal shield is divided; hemipenis extends upto the 34th caudal plate, undivided, composed of many folds and out of one sulcus passes, the area proximal to the oblique folds is with large number of spines. Dorsal colouration is most variable but generally with red or orange spots or markings and a longitudinal series of oval or flower shaped flecks, which are in some individuals are separated from one another by a pair of black cross-bars; lateral aspects are greenish, each scale is with a black marginal tinge and with a black median streak; subcaudal shields are generally with black flecks, which in some individuals unite and form two longitudinal lines.

*Distribution* : India : Gujarat (Surat and Dangs districts), Goa, Kerala, Bihar, Uttar Pradesh; Andamans and Orissa.

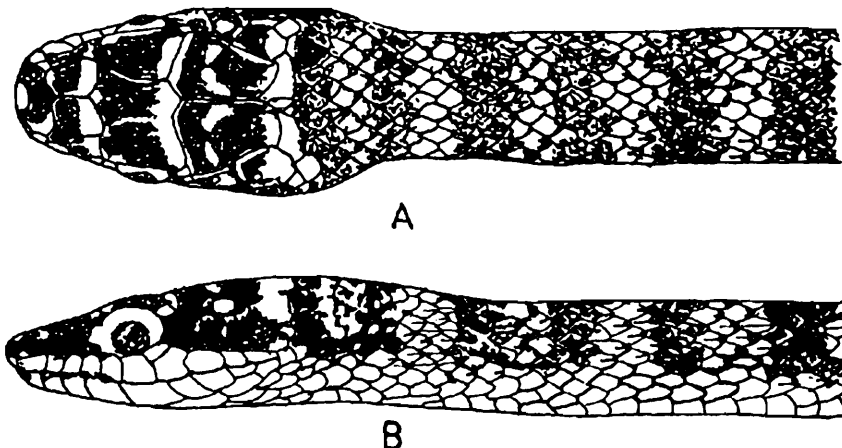
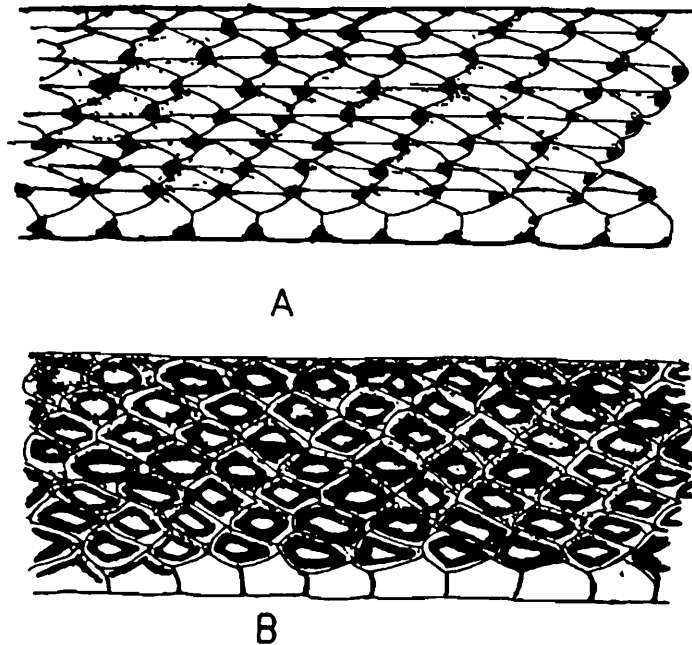


Fig. 103. *Chrysopelea ornata* (Shaw), A. Dorsal pattern of head body, B. Lateral of head and body.



**Fig. 104.** *Chrysopelea ornata* (Shaw), A. Dorsal pattern of body, B. *Chrysopelea paradisi* Boie Dorsal pattern of body.

*Elsewhere* : Sri Lanka, Thailand, Vietnam, Southern China, Hong Kong, Malaysia, Singapore and Upper Burma.

*Habits and habitat* : It is most agile, bold, diurnal, arboreal snake with tremendous climbing power and remarkable power of flight. It is found in an around human surroundings. Its food comprises small lizards, mammals, birds, snakes and insects; it has got special liking for Geckos. The snake accomplished the flight which is fact is gliding by climbing on the tall trees. The snake straightens its body, hollows the ventral surface, moves quickly with a speed and falls at an angle to the ground. In this process it keeps the body quite rigid all the time. It springs and leaps from branch to branch in a tree coiling itself in preparation and then suddenly straightening the whole body out as it leaps across. It can cover the distances upto 4 feet and also in an upward direction. It breeds in May or June and lays, 6-12 elongate eggs in a single clutch.

*Status* : Vulnerable on account of habitat loss during the recent years in many parts of its range.

### 157. *Chrysopelea taprobanica* Smith 1943

1943. *Chrysopelea taprobanica* Smith, *Fauna Brit. Ind. Rept. Amph.*, 3 Serpentes, : 254 (Kanthali, Ceylon).

1984. *Chrysopelea taprobanica*, Mahendra, *Ann. Zool.*, 22 : 137.

*Total length* : Female 960 mm; tail 270 mm.

Colour is light olive brown above, with no red markings, but 52-62 narrow, wavy, black cross-bars; a black spot on each ventral shield to the outside of the lateral keel; subcaudals not spotted.

Scales always more or less distinctly keeled, in 17 rows at mid-body. Last ventral never divided. Ventrals 198-214. Subcaudals 107-123. Anal divided. No hypapophyses on the last dorsal vertebrae.

*Distribution* : Sri Lanka (Kanthali, Kurunegala).

*Status* : A rare snake.

**158. *Chrysopelea paradisi* Boie 1927**  
(Text fig. 104)

1927. *Chrysopelea paradisi* Boie, *Isis* : 547 (Java).

1943. *Chrysopelea paradisi*, Smith, *Fauna Brit. Ind.*, 3 : 254.

The maximum length of this snake reaches upto 1200 mm. Dorsum with or without a longitudinal series of red or yellow flower-shaped spots, usually covering 4 scales. Other dorsal scales black with a pale to yellowish green middle spot, but not black middle streak. Ventral surface pale greenish yellow. Ventral keels frequently black, so also the ventral margins external to the keels and the edges of the subcaudals. Hypapophyses present throughout the vertebral column. Dorsal scales smooth to faintly keeled. Last ventral almost always divided. Ventrals 198-238. Subcaudals 106-149. Other characters are like *C. ornata*.

*Distribution* : Mertens (1968) distinguishes three subspecies : (i) *C. paradisi paradisi* Boie, found in the Malay Peninsula, Burma, Andaman Islands (Narcondam is.), Penag, Singapore, Riou Archipelago, Sumatra and adjacent islands, Java and Borneo; (ii) *C. paradisi variabilis* Mertens, found in the Philippine Islands and (iii) *C. paradisi celebensis* Mertens, confined to Celebes.

*Status* : Available in throughout its range but no where common.

**WOLF SNAKES**

**Genus 33. *Lycodon* Boie 1826**

1826. *Lycodon* Boie, Ferussac's *Bull. Sci. Nat.*, 9 : 238.

1943. *Lycodon*, Smith, *Fauna Brit. Ind.*, 3 : 255.

1966. *Lycodon*, Minton, *Bull. Am. Mus. Nat. Hist.*, 134 : 131.

This genus includes small to medium sized snakes, with elongated body and elongated flat head (depressed); nostrils situated between two nasals; diameter of the eye greater than its distance from the mouth, eyes are moderately developed and are with vertically elliptic pupil; rostral much broader than high; internasal shields much shorter than the prefrontals; loreal elongate, at least two times longer than its height;

postoculars are two; 3rd, 4th and 5th supralabias touching the eye; maxillary bone is strongly arched and bent inwards anteriorly with 3-6 anterior teeth are bigger, fang like and separated by toothless gaps from the rest; these teeth are 7-15 in number, the last two of which are larger than the others; body scales are smooth or feebly keeled, with epical pits and in 19, 17 or 15 rows; ventral shields are with or without a lateral keel; subcaudal shields are paired except in *travancoricus*; hypapophysis are not present in the posterior part of the vertebral column. About 8 species of this genus are available from India.

Most of the members of this genus are expert climbers, most agile, nocturnal, pugnacious in disposition and live on lizards and small rodents. All the species are oviparous and lay elongated eggs.

### Key to the species of Genus *Lycodon*

- I. Loreal present
  - A. Scales smooth
    1. Snout projecting beyond the lower jaw.
      - a. Ventrals angulate laterally; supralabials 9; anals 1 or 2; loreal usually in broad contact with the internasals. .... *L. aulicus*
      - b. Ventrals not angulate laterally.
        - 8 supralabials; light cross-bars from nape to base of tail, expanded laterally; anals 2 ..... *L. striatus*
        - 9 supralabials, a series of yellow vertebral spots, opposite which are yellow bars on the flanks; anals 2 ..... *L. flavomaculatus*
    2. Snout not projecting; darkish above, stippled all over with white due to a pair of white spots on each scale; anals 2. .... *L. jara*
  - B. Scales more or less keeled; anal 1; Back with yellowish cross-bars ..... *L. fasciatus*
- II. Loreal absent; 2 anals; back with a network of white lines ..... *L. mackinnoni*

### TRAVANCORE WOLF SNAKE

#### 159. *Lycodon travancoricus* (Beddome 1870)

1870. *Cercaspis travancoricus* Beddome, Madras Month *J. Med. Sci.*, 2 : 169 (Travancore Hills, London) and *J. Soc. Bibl. Nat. Hist.* I. 1940, : 327 (reprint).

1943. *Lycodon travancoricus*, Smith, *Fauna Brit. Ind.*, 3 : 259.

1966. *Lycodon travancoricus*, Minton, *Bull. Am. Mag. Nat. Hist.*, 134 : 133.

Less calyculate, the flounces being large and arranged in oblique or transverse folds and second narrow portion opposite to the suicus is with spines; the remaining

part of the hemipenis is spinose, the largest spines being opposite the suicus; at the extreme tip of the penis are two small smooth pockets or areas.

*Distribution* : India, Western Ghats, as far north as Matheran; Madhya Pradesh (Jabalpur); Andhra Pradesh (Vishakhapatnam); Tamil Nadu (Arcot, Nilgiri Hills).

*Elsewhere* : Pakistan Sind (on the basis of a single specimen collected in the garden of Hyderabad college, by James A. Peters in 1944 and presented it to Chicago Natural History Museum now Field Museum of Natural History-Museum No. 42211).

#### 160. *Lycodon kundui* Smith 1943

1943. *Lycodon kundui* Smith, *Fauna Brit. Ind. Rept.*, 3 : 260.

The maximum length of this typical *Lycodon* reaches upto 225 mm, tail 38 mm. (Described from a single juvenile specimen obtained by Dr. Kundu of the Harcourt Butler Institute, Rangoon at Gyobya, Taikkyi Township, Pegu district. The species has been named by Dr. Malcolm Smith after the name of Dr. Kundu). Dorsum is bluish-black, with narrow white cross-bars; on the posterior half of the body they are closer together and bifurcate or break up on the sides; a white bar on the nape; lower parts of (Ventrals and outer scale rows) white. In dentition, shape of the maxillary bone, in the reduction of the number of scales round the body to 15, labials and temporal scales this *Lycodon* differs from other members of this genus drastically, other characters are : Anterior and posterior nasals are subequal; loreal is two times longer than high, distinctly separated from the internasal and the eye; temporals 1+2; supralabials 7, third and fourth touch the eye; infralabials 4, in contact with the anterior pair of genials, which are much larger than the posterior; scales of body in 15 : 15 : 15 rows; ventrals 186, strongly angulated laterally, subcaudals 70; anal 2.

*Distribution* : Myanmar (Gyobya, Taikkyi Township, Pegu district).

*Status* : Very rare, known from a single juvenile specimen.

#### SHAW'S PURPLE-BLACK WOLF SNAKE

or

#### YELLOW-STRIPED WOLF SNAKE

#### 161. *Lycodon jara* (Shaw 1802)

1802. *Coluber jara* Shaw, *Gen. Zool.*, 3 : 525 (Based on Russell's plate).

1943. *Lycodon jara*, Smith, *Fauna Brit. Ind.*, 3 : 260-261.

The maximum length of the snake reaches 535 mm., tail 115 mm. in males and 550 mm., tail 105 mm. in females. The dorsal colouration is brownish or purplish-black stippled all over with white in life, the pattern being formed by a pair of white spots on each scale. Upper lip and lower surface uniform white. A white collar always present in the young. Snout not projecting beyond the lower jaw. Loreal in contact with the internasal. Preocular 1. Temporals 1+2 or 2+3. Supralabials 9, rarely 8, only

the 1st supralabial touching the nasal. Scales smooth, in 17 : 17 : 15 rows. Ventrals 167-188, not angulate laterally. Subcaudals 52-74. Anals 2. Hemipenis extends upto the 10th caudal plate; the distal 1/3 is obliquely flounced and calyculate; the remaining part of the organ bears spines which are quite large and almost of equal size.

*Distribution* : India : Orissa (Ganjam district); West Bengal; Assam; Eastern Himalayas as far west as longitude 85°

*Status* : Available in all the parts of range but no where is common.

### NORTHERN WOLF SNAKE

or

### BARRED WOLF SNAKE

#### 162. *Lycodon striatus* (Shaw 1802)

1796. *Indian Serp.*, 1 : 22 & 32, pls. 16 & 26. (Vizagapatam and Hyderabad).

1943. *Lycodon striatus*, Smith, *Fauna Brit. Ind.*, 3 : 261.

1966. *Lycodon striatus*, Minton, *Bull. Am. Mus. Nat. Hist.*, 134 : 131-132.

This wolf snake never exceeds 430 mm in length, its body is slender, cylindrical and tapering; head is slightly differentiated from the neck; snout is blunt almost two times wider than its height; nostril is pierced between nasals; loreal is elongate, in contact with the internasal; preocular is one; postoculars are two; temporals are 2+3 (1+3); supralabials are 8, fourth and fifth touch the eye; lower labials are 9 or 10; anterior chin shields are longer than the posterior; dorsal body scales are smooth, with epical pits; scale rows at the middle of body are 17 (17 : 17 : 15); ventral shields are 172-214, strongly angulate laterally; subcaudal shields are 57-80; anal is divided; hemipenis extends upto the 10th caudal plate, forked near the tip, the most of the organ has longitudinal folds which having more or less distinct spines, papillae are fleshy. Dorsal colouration is dark-brown or blackish, with white or yellow cross-bars from head to tail, which expand laterally and enclose triangular spots in the anterior part of the body, a white bar on the nape is generally present (in many individuals it is not present); upper lips and ventral parts are white.

*Distribution* : India : Gujarat (Gandhinagar, Bhavnagar, Bharuch, Vadodara and Panchmahals districts); whole of India as far as east as Chota Nagpur and northward to Punjab.

*Elsewhere* : Sri Lanka, Pakistan (Sind, Baluchistan, north-west frontier provinces); Transcaspia and eastern Iran.

*Habits and habitat* : This wolf snake is a secretive, nocturnal creature, generally available in agriculture fields by the side of canals and other moist places. They feed on small lizards and frogs. The breeding season starts in March-April and 2-4 eggs are laid in July and August.

*Status* : Though no where common, but not endangered.

## WALL'S YELLOW-SPOTTED WOLF SNAKE

163. *Lycodon flavomaculatus* Wall 1907

1907. *Lycodon flavomaculatus* Wall, *J. Bombay Nat. Hist. Soc.*, **17** : 612 (type loc. Oudi and Kirkee).

1943. *Lycodon flavomaculatus*, Smith, *Fauna Brit. Ind.*, **3** : 262.

This snake which is about 480 mm in length, appears like *Lycodon striatus* but differs from it by having 9 supralabials instead of 8, characters of the hemipenis and in colour. Its snout projects beyond the lower jaw; loreal is 1, in contact with the internasal; precoular is one; temporals 2+3, rarely 1+2; first supralabial touch the nasal shield; dorsal body scales are smooth, in 17 : 17 : 15 rows; ventral shields 170-183; subcaudal shields are 53-63; anal shield is divided; hemipenis extends upto the 15th subcaudal plate and its distal half is beset with large papillae. Dorsal colouration is blackish, with a series of round or triangular yellowish vertebral spots, opposite which bars of the same colour descent and broaden to form a reticulation on the flanks.

*Distribution* : India : Gujarat (Bhavnagar district), Western Ghats (Nasik, Oudi, Kirkee, Poona, Deolali, Dharwar, Sangle); central India (Buidana, Berar).

*Status* : It is a rare and most secretive snake.

164. *Lycodon mackinnoni* Wall 1906

1906. *Lycodon mackinnoni* Wall, *J. Bombay N.H.S.*, **17** : 29, fig. head (Mussooree; London).

1943. *Lycodon mackinnoni*, Smith, *Fauna Brit. Ind.*, **3** : 263.

The maximum length as recorded in a female is 365 mm, tail 65 mm. Dorsal colouration is dark brown, with a network of white lines; white below. Snout projecting beyond the lower jaw. No loreal. Preocular 1. Temporals 1+2 or 2+3. Supralabials 8. Scales smooth, 17 : 17 : 15 rows. Ventrals 163-187, feebly angulate laterally. Subcaudals 48-56. Anals 2. Hemipenis forms two parts, a distal one which is transversely flounced and other is a proximal portion in which there are a few but very large spines.

*Distribution* : India : Western Himalayas (Mussoorie, Almora, Muktesar near Naini Tal).

*Status* : A rare snake.

## COMMON WOLF SNAKE

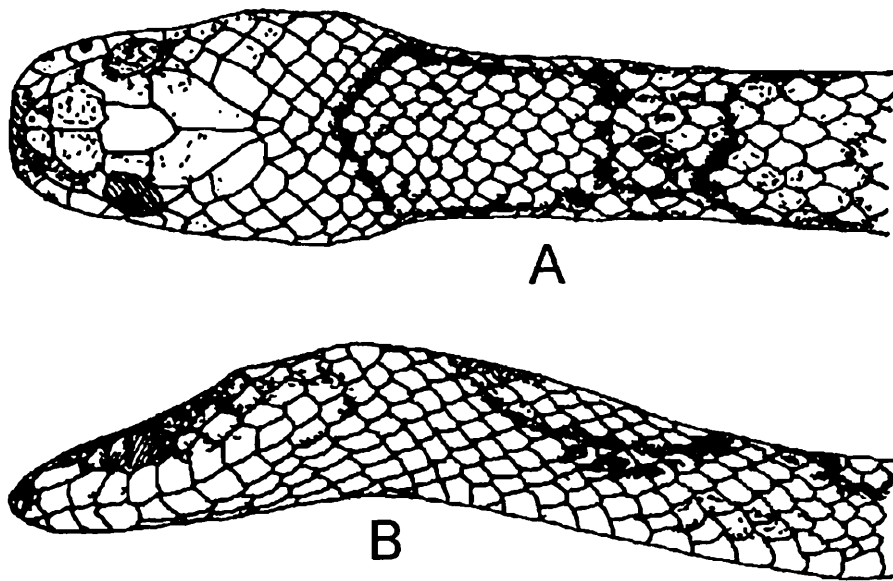
165. *Lycodon aulicus* (Linnaeus 1754)

(Text figs. 105, 107 & 108)

1754. *Coluber aulicus* Linnaeus, *Mus. Adolph. Frider.*, **1** : 29, pl. 12, fig. 2 (America).

1943. *Lycodon aulicus*, Smith, *Fauna Brit. Ind.*, **3** : 263.

This wolf snake reaches to a length of about 950 mm; its snout is spatulate and well beyond the lower jaw; loreal is one, in intimate contact with the internasal; preocular is one, generally touching the frontal shield; temporal scales are variable, usually 2+3; supralabials are 9, first and second touch the nasals; body scales are smooth, in 17:17:15 rows; ventral shields are 172-224, strongly angulate laterally; subcaudal shields are 56-80; anal shield is divided in most of the individuals, rarely single anal shield is also present; hemipenis extends upto the 10th caudal plate and the structure of the organ is almost like the striatus. Dorsal colouration is brown or grayish with white or yellow cross-bars; ventrum is whitish; upper lip is white or with brown spots.



**Fig. 105.** *Lycodon aulicus* (Linnaeus), A. Dorsal pattern of head and neck, B. Lateral pattern of head and neck.

**Distribution :** India : Gujarat (Banaskantha, Gandhinagar, Vadodara, Dangs, Bhavnagar, Kachchha and Bharuch districts); whole of India including Andaman and Nicobar Islands.

**Elsewhere :** Sri Lanka, Hong Kong; Laos; Malaysia; Mauritius; Nepal; North and South Vietnam; Pakistan; Bangladesh; Philippines, Celebes; the Maldives Islands; Myanmar; Indonesia; South China.

**Habits and habitat :** It is most pugnacious, nocturnal snake and bites savagely on provocation; it is a very good climber and prefers to live in or around human habitations. Its food mainly comprises the small lizards, mice and frogs. It is oviparous and lays 3-11 eggs in a single clutch.

**Status :** It is most common snake throughout its range.

## EAST HIMALAYAN WOLF SNAKE

166. *Lycodon fasciatus* (Anderson 1879)

(Text fig. 106 &amp; 107)

1870. *Ophites fasciatus* Anderson, *Anat. Zool. Res. W. Yunman*, : 827, pl. 78, fig. 1 (Ponsee [Pangse], Yunnan).

1943. *Lycodon fasciatus*, Smith, *Fauna Brit. Ind.*, 3 : 266-267.

The snake reaches to a maximum length of 850 mm, tail 170 mm in males (934 mm., Wall). The dorsal colouration is black or purplish-black with 28-49 yellowish cross-bars on the body. Belly blotched and powdered with black. Hinder part of the

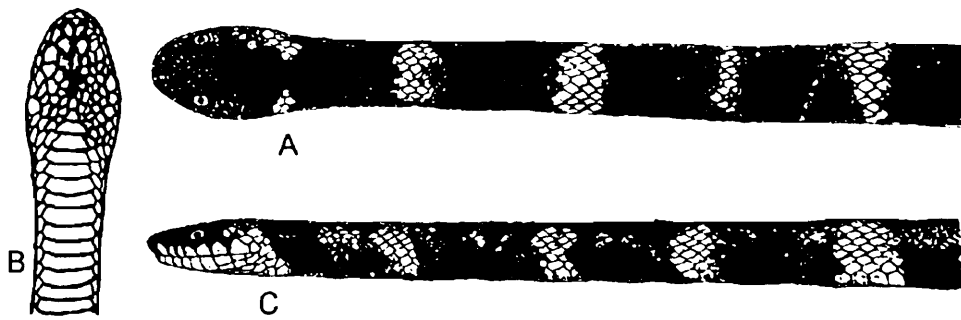


Fig. 106. *Lycodon fasciatus* (Anderson), A Dorsal pattern of head and body, B. Ventral view of head, C. Lateral pattern of head and body.

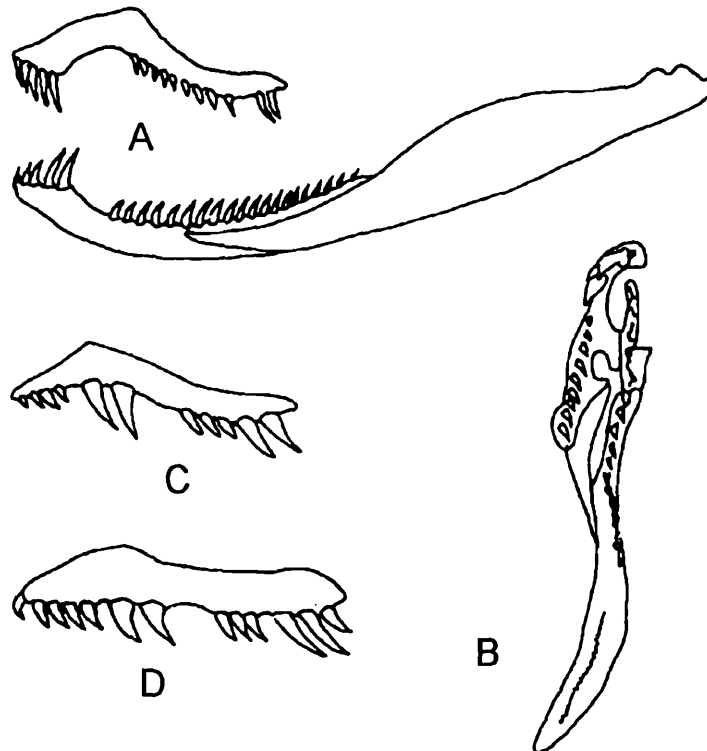


Fig. 107. *Lycodon aulicus*, A. Maxilla and mandible, B. Palato-maxillary arch *Lycodon fasciatus*, C. Maxilla of *Lycodon fasciatus*, D. Maxilla of *Dinodon flavozonatum*.

head white in the young. Snout projecting beyond the lower jaw. Loreal 1, well separated from the internasal. Temporals 2 +3. Supralabials 9. Scales in 17 : 17 : 15 rows, more or less keeled. Ventrals 197-220, feebly angulate laterally. Subcaudals 69-94. Anal 1. Hemipenls extends upto the 8th caudal plate; the complete organ bears the spines, which are quite small and closely set except at the proximal end, where they are much larger and fewer in number; the sulcus is with strongly raised and spinose edges.

*Distribution* : India : Eastern Himalayas; Assam.

*Elsewhere* : S. E. Tibet; Myanmar; Thailand; Yunnan; Upper Laos; Western China.

*Habits and habitat* : The species inhabits the hilly areas with plenty of bushes and trees (between 3000 to 7000 feet altitude). It lays 4-14 eggs in a single clutch. Its food comprises mainly the lizards and snakes.

*Status* : The species is quite common in Assam, Northern Myanmar (Burma) and other parts of its range.

#### ANDAMAN WOLF SNAKE

##### 167. *Lycodon tiwari* Biswas & Sanyal

1965. *Lycodon tiwari* Biswas & Sanyal, *Proc. Zool. Soc. Calcutta*, **18** : 137-141.

The maximum length of the snake is 622 mm, tail 146 mm (sexes not recorded). Dorsal colouratin is reddish-bläck; head shields with white irregular patches; body is uniformly coloured; a dark dorsal patch is present on the neck; body scales dark-chocolate in the center and are bordered with white; belly is white. Rostral shield is triangular in shape, width twice the height; internasal nearly as long as wide; prefrontal shield is slightly longer than wide; forntal shield is triangular, its base is slightly shorter than its median length, its length is equal to its distance from rostral but shorter than that of frontal; nostril is pierced between the two nasals (in a concave depression), anterior one is longer; loreal scale is rectangular, longer than brcad, may or may not in contact with internasal; preocular shield is slightly broader than long, separated from frontal by supraocular; borders of prefrontal, frontal, preocular and supraocular are in contact at a point; postocular are 2, quite small; temporals 3+4, last one is largest and forms a border with the parietal shield; supralabials are 9, thrid, fourth and fifth touch the eye; infralabials are 9, first five touch anterior genials and 6th one posterior genials, first five are largest, 5th and 6th smaller, and last three smallest in size, body scales are elongated, smooth, in 17 : 17 : 15 rows, ventrals scales 231-235; subcaudals 90; anals 2. Hemipenis not knwon.

*Distribution* : India : Andaman Islands (Mayabundar, North Andaman); Nicobar Islands (Govt. Hospital, Car Nicobar Island).

*Status* : A rare snake.

Genus 34. *Cercaspis* Wagler 1830

1830. *Cercaspis* Wagler, *Syst. Amph.*, 191 (type *Hurria carinatus* Kuhl).

1984. *Cercaspis*, Mahendra, *Ann. Zool.*, 22 : 188.

Resembles *Lycodon* in general appearance and dentition. Prezygapophyses of the dorsal vertebrae with strong lateral expansions and the neural spines expanded and divided into two by a longitudinal groove. The strongly dilated prezygapophyses of the vertebrae and be readily felt, without dissection, as longitudinal ridges-one on each side of the neck. Scales strongly keeled, in 19 rows. Subcaudals single.

A single species.

168. *Cereaspis carinatus* (Kuhl 1820)

(Text fig. 108)

1820. *Hurria carinatus* Kuhl, *Beitr. Zool. vergl. Anat.*, : 95 (no type loc. given).

1984. *Cereaspis carinatus*, Mahendra, *Ann. Zool.*, 22 : 188.

*Total length* : Male 730 mm; tail 125 mm.

Colour is blue-black with 23-26 whitish or pale yellow annuli. Hinder part of the head white in the young.

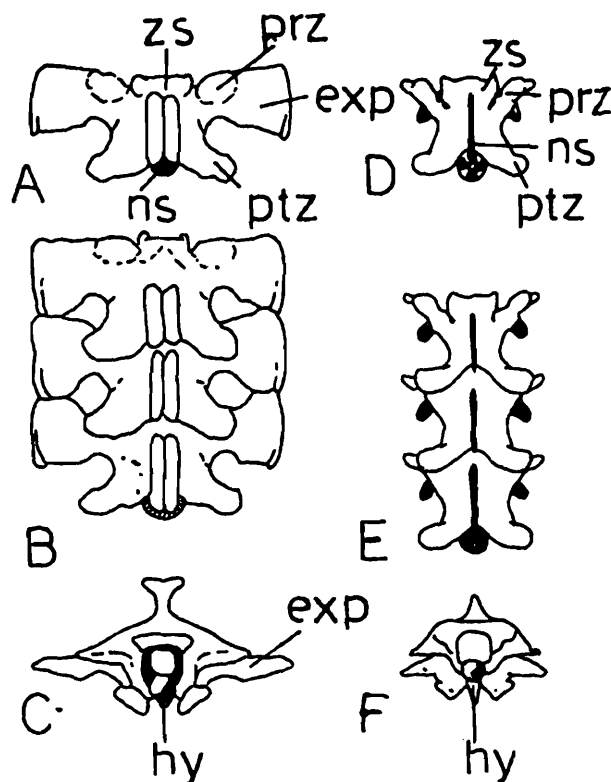


Fig. 108. A. B. Dorsal, and C. Hinder, view of vertebrae of *Cercaspis carinatus*. D.E. and F. same of *Lycodon aulicus*. exp., expansion of prezygapophysis; hy., hypapophysis; ns., neural spine; prz., prezygapophysis; ptz., postzygapophysis; zs., zygosphene.

Loreal not in contact with the internasal. Preocular 1. Postoculars 2. Temporals 2+2 or 2+3. Supralabials 8 or 9, the 3rd, 4th and 5th touching the eye. Scales in 17 (19) : 19 : 17 rows. Ventrals 180-202, with a strong lateral keel. Subcaudals 42-64, not paired. Anal 1. Hemipenis extends upto the 10th caudal plate, transversely flounced at distal part, spinose in the remainder; the spines are comparatively thick and short, the largest ones being opposite the sulcus.

*Distribution* : Sri Lanka (Balgonda district).

*Status* : A common snake in low country side, foot hills and upto 4000 feet altitude.

### Genus 35. *Dinodon* Dum. & Bibr. 1853

1853. *Dinodon* Dum. & Bibr., *Mem. Acad. Sci. Paris*, 23 : 463.

1943. *Dinodon*, Smith, *Fauna Brit. Ind.*, 3 : 269.

The maxillary bone is slightly arched, with 5-7 anterior teeth increasing in size, the last ones fang-like, separated by a diastema from the posterior group of 5 or 6 teeth, of which the last three are enlarged. Body more or less elongate. Head depressed, not or but slightly distinct from the neck. Snout broad, not elongate as in *Lycodon*, shorter in length than the interocular distance, broadly rounded at the tip. Eye moderate, with vertically elliptic pupil. Loreal elongate. Scales smooth or feebly keeled, in 17 : 17 (19) : 15 rows, with apical pits. Ventrals with or without a lateral keel. Subcaudals paired.

*Range* : The Eastern Himalayas, Indo-China, China and Japan.

### Key to the species of Genus *Dinodon*

Anal entire; 25 to 36 light cross-bars on the back ..... *D. septentrionalis*

Anals 2; 85-95 light cross-bars on the back ..... *D. flavozonatus*

### GUNTHER'S FALSE WOLF SNAKE

169. *Dinodon septentrionalis* (Gunther 1875)

(Text figs. 109)

1875. *Ophites septentrionalis* Gunther, *P.Z.S.*, : 235 (E. Himalayas or Khasi Hills; London).

1943. *Dinodon septentrionalls*, Smith, *Fauna Brit. Ind.*, 3 : 270.

The maximum length of the snake reaches upto 1180 mm, tail 190 mm, in males. The dorsal coloration is purplish brown, with 25-36 narrow, white, transverse bars. Lower parts white, sometimes spotted or barred with black. Tail heavily marked with black below. Hinder part of the head white in the young, usually black in the adult. Posterior nasal is longer than the anterior; loreal small, separated from internasal and the eye; ventrals 207-217, angulate laterally. Subcaudals 81-104. Anal 1. Hemipenis unforked, extends upto 10th caudal plate organ is calyculate and bears spines

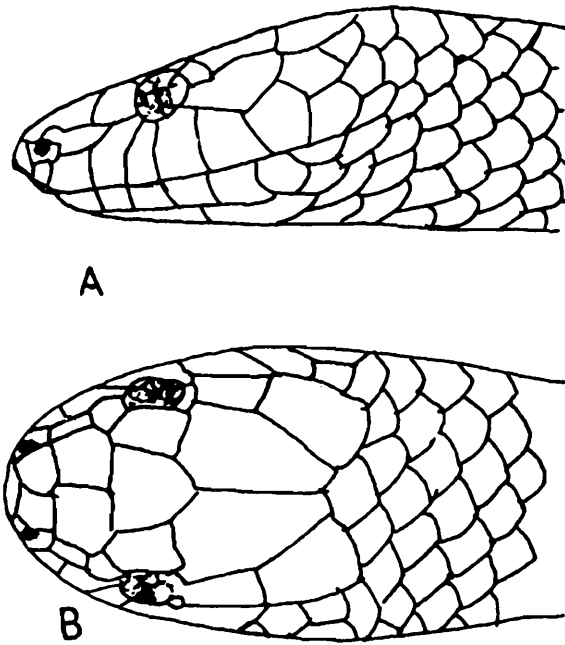


Fig. 109. *Dinodon septentrionalis* (Gunther). Head : A. Lateral view, B. Dorsal view.

throughout; the calyces are small and bear a minute spine on each corner; at the extreme tip of the organ the calyces are larger and extend upto the whole length; six prominent folds are distinct throughout the length, out of which two form the border of the sulcus.

*Distribution* : The Eastern Himalayas, Assam.

*Elsewhere* : Burma, Thailand, Upper Laos and Tong-king.

*Status* : Undetermined, but species seems to be not uncommon.

#### SIKKIM FALSE WOLF SNAKE

##### 170. *Dinodon gammiei* (Blanford 1878)

1878. *Ophites gammiei* Blanford, *J.A.S. Bengal*, 47 : 130 (Cinchona plain, Darjeeling, Calcutta).

1943. *Dinodon gammiei*, Smith, *Fauna Brit. Ind.*, 3 : 271.

The maximum length of the snake reaches upto 1150 mm, tail 290 mm in males; not known about the females. The dorsal colouration is formed with alternating black and light greenish-yellow rings with very irregular margins, 28 to 36 + 15 or 16 in number; head is black with light spots on most of the shields; a large light spot on each side of the posterior part of head. Scallation is like *D. septentrionalis* except that scales at mid-body 19; ventrals 206-214; subcaudals 94-104; anal 1; Hemipenis extends upto the 10th caudal plate; the anterior half of the organ is calyculate, the calyces are small and bear a minute spine at each angle; the proximal part of the penis is provided with large coarse spines; parallel with the sulcus and separated from it by a short distance are two folds.

*Distributiion* : India : Sikkim and Darjeeling district of West Bengal.

*Status* : A rare species, known by 4 examples only.

171. *Dinodon flavozonatus* Pope 1928

(Text figs. 107)

1928. *Dinodon flavozonatus* Pope, *Amer. Mus. Novit No.*, **325** : 2.

1984. *Dinodon flavozonatus*, Mahendra, *Ann. Zool.*, **22** : 188.

*Total length* : Male 1440 mm; tail 270 mm; female 1210 mm; tail 220 mm.

Colour is black above, with 85-95 narrow yellow cross-bars, which bifurcate on the sides enclosing dark spots. Yellow below with large black spots. Head black with symmetrical light markings; a stripe from the eye to the angle of the mouth and another parallel with it starting from the hinder margin of the parietal. Labials edged with black.

Ventrals 225-240, with a distinct lateral keel. Subcaudals 85-98. Anals 2. Hemipenis : The organ extends to the 13th caudal plate, not forked, the distal 1/3 of the penis has smooth longitudinal folds; the middle 1/3 is calyculate, the lips being extremely small and compact forming a spongy appearance; the edges of the cups bear spines; this area gradually merges into a spinose area; the spines gradually increasing in size as they approach the base of the organ; the sulcus lips are formed by two thick folds, which also bear spines, like the part adjacent to it.

*Distribution* : Upper Burma, Tong-King and Western China.

*Status* : Available throughout the range but no where common.

Genus 36. *Dryocalamus* Gunther 1858

1858. *Dryocalamus* Gunther, *Cat. Col. Sn. Brit. Mus.*, 121 (type *tristrigatus*).

1943. *Dryocalamus*, Smith, *Fauna Brit. Ind.*, **3** : 272.

Small nocturnal terrestrial; good climbers; of gentle disposition (M. Smith, 1943, p. 273), but fierce when provoked (Wall, 1921, p. 166).

Maxillary bone inwards and extending well beyond the palatine, with from 8-10 teeth increasing in size posteriorly, similar in form and disposition to those in the genus *Oligodon*.

Head subovate when viewed from above, depressed, distinct from the neck. Snout short. Eye large, with vertically elliptic pupil. Scales smooth, in 13 or 15 rows throughout, with apical pits. Ventrals strongly angulate laterally. Tail moderate : about 1/5 of the total length. Subcaudals paired. Hypapophyses absent on the posterior dorsal vertebrae.

The genus *Dryocalamus* has been included in the subfamily *Oligodontinae*, because it shows considerable similarity to *Oligodon* in many features, particularly the numerical reduction in the maxillary teeth correlated with increase in their size, shortened loreal region, blunt snout, prominent rostral, wider interocular region in comparison with the distance between the eyes and the top of the snout and few supralabials. Its vertically elliptic pupil is an adaptation to nocturnal habits.

*Distribution* : Ceylon, India, Vietnam, the Malayan region and the Philippines. Only two species occur in the Indian subcontinent.

### Key to the species of the Genus *Dryocalamus*

- A single elongated scale (loreal united with preocular) between the nasal and the eye; no separate preoculars; ventrals 233-265; subcaudals 90-108; anal 1 .....  
 ..... *D. davisonii*
- 1-2 preoculars present in addition to the elongated loreal + preocular scale; ventrals 199-243; subcaudals 65-88; anals 2, rarely 1 ..... *D. nympha*

### BRIDAL SNAKE

#### 172. *Dryocalamus nympha* (Daudin 1803)

(Text figs. 110)

1803. *Coluber nympha* Daudin, *Hist. Nat. Rept.*, 6 : 244 pl. 75, fig. 1 (based on Russell's pls.)

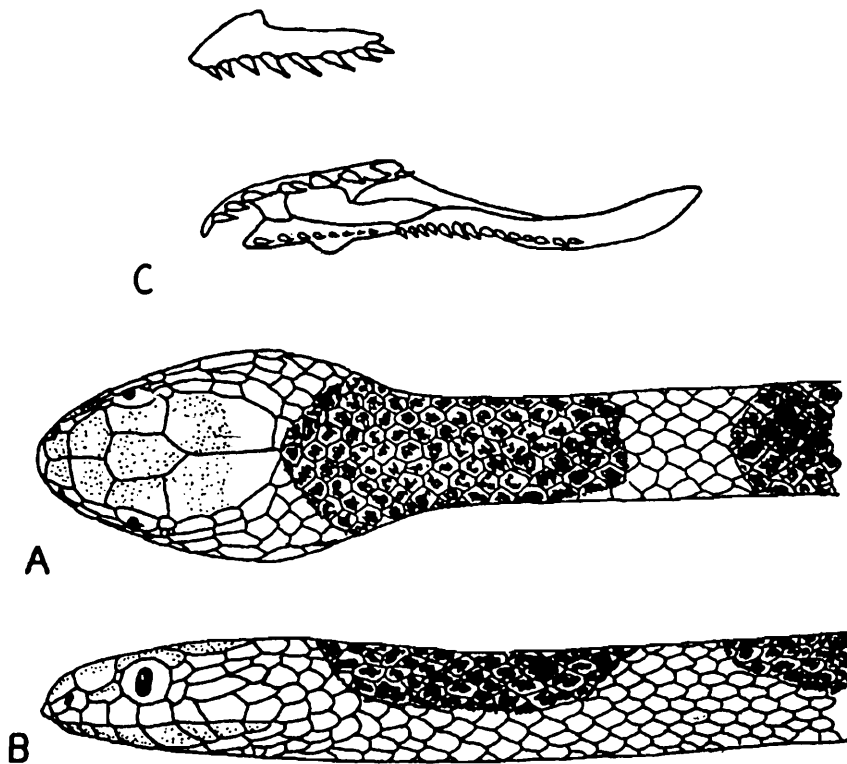
1943. *Dryocalamus nympha*, Smith, *Fauna Brit. Ind.*, 3 : 274.

The maximum length is 520 mm, tail 110 mm in male; nothing is known about female. Dorsal colouration is dark brown or black. Upper lip, hinder part of the head and nape, and lower parts uniform white. Sides, with white or yellowish cross-bars expanding laterally and often broken up into spots on the hinder part of the body. Nasal entire or divided. An elongated scale (loreal + preocular) between the nasal and the eye, in addition to 1 or 2 preoculars, postoculars 2 or 3. Temporals 2+2 or 2+3. Supralabials 6 or 7 (rarely 8), the 3rd and 4th touching the eye. Scales in 13 or 15 rows throughout. Ventrals 199-243, strongly angulate laterally. Subcaudals 65-88. Anals 2, rarely 1. Hemipenis extends upto 10th caudal plate; the distal half of the organ is strongly flounced; the proximal has large spines arranged in longitudinal series, the line of demarcation between the two is well defined.

*Distribution* : India : Orissâ.

*Elsewhere* : Plains and hills at low altitudes in Ceylon and Southern China as far north as lat. 12°30' on the western side.

*Status* : Available but nowhere common.



**Fig. 110.** *Dryocalamus nympha* (Daudin). A. Dorsal pattern of head and neck, B. Lateral pattern of head and neck, C. Maxilla and palato-maxillary arch of *Dryocalamus davisonii*.

173. *Dryocalamus davisonii* (Blanford 1878)  
(Text figs. 110)

1878. *Ulupe davisonii* Blanford, *J.A.S. Bengal xvii*, : 128 (Nawlabu Hill, east of Tavoy : Calcutta).

1984. *Dryocalamus davisonii*, Mahendra, *Ann.Zool.*, **22** : 219.

*Total length* : Male 920 mm; tail 205 mm.

Dorsal colour is dark brown or black elongated spots separated by white or pale brown narrower interspaces; on the hinder half of the body the brown spots become smaller or may be broken up. Snout brown, connected with the first dorsal brown spot by a longitudinal brown band, the rest of the head being whitish. Lower parts whitish. Tail mottled with brown.

Nasal undivided. A single elongated scale (= loreal + preocular) between the nasal and the eye; no separate preoculars. Postocular, 1 to 2. Temporals 1 + 2 or 2+2. Supralabials 7, the 3rd and 4th touching the eye. Scales in 13 rows throughout. Ventrals 233-265, strongly angulate laterally. Subcaudals 90-108. Anal 1. Hemipenis is as in *D. nympha*.

*Habits and habitat* : This snake inhabits the low lands. Oviparous lays 3-4 much

elongated eggs (35 × 9 mm.). Breeding takes place in May and extends upto September. The hatchlings measure 250 mm in length.

*Distribution* : Myanmar (Rangoon and Tavog, Tenasserim); Thailand between lats. 18° and 11°N.; Cambodia; Cochin China and Southern Annam.

*Status* : Available in sufficient number.

### SOUTH INDIAN BRIDAL SNAKE

#### 174. *Dryocalamus gracilis* (Gunther 1864)

1864. *Odontomus gracilis* Gunther, *Rept. Brit. Ind.*, : 234 (Anamallays; London).

1943. *Dryocalamus gracilis*, Smith, *Fauna Brit. Ind.*, 3 : 275.

The maximum length reaches upto 620 mm, tail 110 mm in males. Colouration is like *D. nympha*. Nasal shield is almost divided into an anterior and posterior part; loreal shield is in broad contact with the eye, with a small preocular, may be absent in few individuals; postoculars 2 or 3; temporals 2+2 or 2+3; supralabials 7, third and fourth touch the eye; body scales in 15 rows; ventrals 199-243; subcaudals 75-87, anal 1, rarely 2. Hemipenis is similar to *D. nympha*.

*Distribution* : India : Peninsular India (Anaimalais, Cuddapah Hills, Berhampore, Orissa).

*Elsewhere* : False island, off the coast of Arakan, Myanmar, Sri Lanka.

*Status* : A rare snake.

### Genus 37. *Sibynophis* Fitzinger 1843

1843. *Sibynophis* Fitzinger, *Syst. Rept.*, : 26 (type *Herpetodryas geminatus*).

1943. *Sibynophis*, Smith, *Fauna Brit. Ind.*, 3 : 276.

This genus comprises the hill snakes with the following characters : head slightly differentiated from the neck; teeth are very numerous and closely set, equal in size, bayonet shaped, 30-50 in each maxilla; dentary bone is completely detached from the articular posteriorly; body is cylindrical with smooth scales in 17 rows, which is a most stable character in all the seven species available in the oriental region; eyes are quite larger, with a round pupil; ventral shields are rounded; subcaudal shields are paired; hypapophysis are developed throughout the vertebral column; rostral is broader than high; frontal shield is distinctly longer than its distance from the end of the snout; nostril is pierced between the two nasals; prefrontal shields are longer than the internasals; pre and 2 postoculars are available in all the species; genials are subequal in size or the anterior pair is slightly longer, in contact with 4 infralabials; anal is divided. All the species are oviparous, laying from 2-4 eggs in a single clutch. About 7 species of this genus are distributed in oriental region, out of which 3 are available in India.

### Key to the species of Genus *Sibynophis*

- I. 9 or 10 supralabials.
1. One anterior temporal, in contact with the 8th supralabial; 90 or more subcaudals; head with two black transverse bars ..... *S. collaris*
2. Two anterior temporals; subcaudals less than 80; head and nape black or dark brown.  
A black stripe along the side of the body; a pair of yellow spots on neck.....  
..... *S. bistrigatus*
- II. No black stripe along the side of body, but a vertebral series of black spots, a yellow transverse bar between the eyes and two broad yellow ones bordering the dark colour of the nape 7 or 8 supralabials; normally one anterior temporal; subcaudals less than 80; head and nape dark brown or black, with a large oval patch and two broad yellow ones bordering the dark colour of the nape .....  
..... *S. subpunctatus*

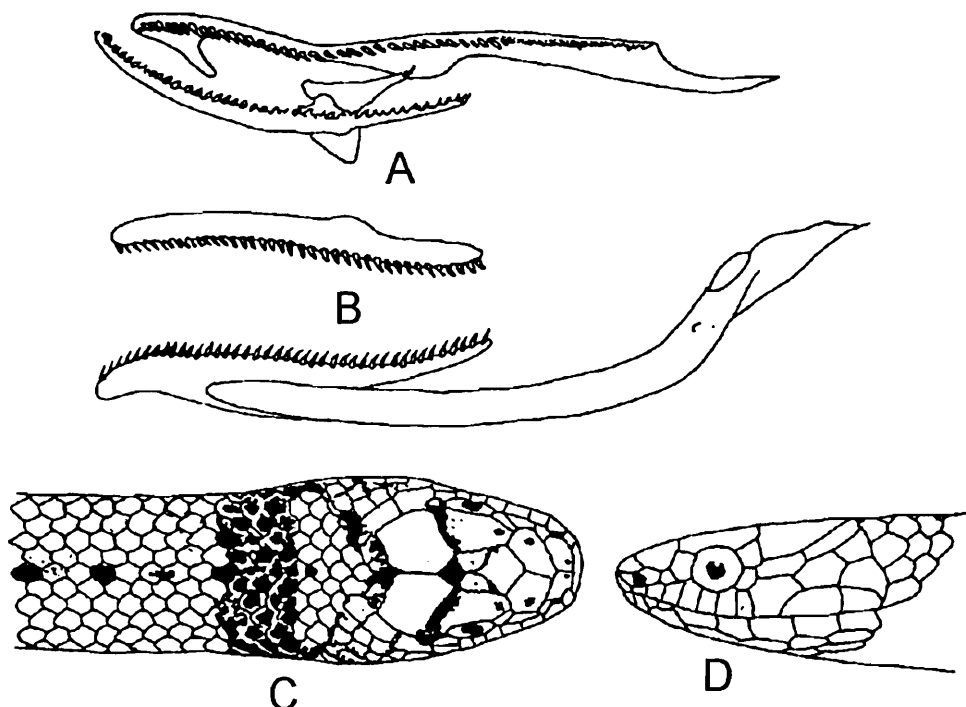
#### COLLARED BLACK-HEADED SNAKE

##### 175. *Sibynophis collaris* (Gray 1853)

(Text fig. 111)

1853. *Psammophis collaris* Gray, *Ann. Mag. Nat. Hist.*, (2)xii : 390 (Khasi Hills; London).

1943. *Sibynophis collaris*, Smith, *Fauna Brit. Ind.*, 3 : 277.



**Fig. 111.** *Sibynophis collaris* (Gray). A. Palatomaxillary arch, B. Maxilla and mandible, C. Dorsal pattern of head and neck D. Lateral view of head.

The maximum length of this snake reaches upto 760 mm, tail 235 mm, in females; males are said to be smaller in length. The dorsal colouration is brownish; ventrum is yellowish; head is with two transverse bars, one is just behind the eye and one more across the occiput; nape is black, with yellow border on the back side; supralabials are 10, rarely 9 or 11 in certain snakes, 4th to 6th touch the eye; 1 anterior temporal, in contact with the 8th labial; parietal touches upper preocular only or is just in contact with the lower; ventrals 155-186; subcaudals 100-125, anals 2. The hemipenis extends upto the 9th caudal plate, not forked; the distal 1/3 is calyculate, the calyces are small and with scalloped edges; the proximal 2/3 of the organ bears the spines, which gradually increase in size and those present at the base of the penis are quite large; the spinose area near the sulcus is divided into two for a short distance by an extension of the calyculate area.

*Distribution* : India : The Himalayas as far west as Simla; Assam (north to the Mishmi Hills).

*Elsewhere* : Western Yunnan; Laos; whole of Myanmar; Thailand (Hilly areas); Annam (Langbian Plateau and hills W. of Hue); Malaysia (Gunong Tahan, Pahang).

*Habits and habitat* : Inhabiting upto a high altitude of 10000 feet in Eastern Himalayas and Assam. The main food of this snake consists of lizards, mainly scinks. It seems to be devouring snakes also (wall records findings a snake's tail in the stomach of one individual).

*Status* : It is a common snake in throughout its range.

#### LIGHT-BROWN BLACK-HEADED SNAKE

##### 176. *Sibynophis subpunctatus* (Dum. & Bibr. 1854)

1854. *Oligodon subpunctatus* Dum. & Bibr., *Erp. Gen.*, 7 : 58 (type loc. Malabar).

1943. *Sibynophis subpunctatus*, Smith, *Fauna Brit. Ind.*, 3 : 279.

This snake reaches to a length of about 460 mm; is with 9 or 10 supralabials, the 3rd, 4th and 5th (or 4th, 5th, and 6th) touching the eye; two anterior temporals are present, the lower one is wedged in between 7th and 8th (or 6th and 7th) supralabials; ventral shields are 151-215; subcaudal shields are from 42-76; the hemipenis extends to 8th or 9th subcaudal plate and is not forked; the distal 1/3 portion of hemipenis is calyculate, the calyces are with scalloped edges; the proximal 2/3 portion is with spines, which are almost uniform in size and arranged in longitudinal series. Dorsal colouration is light brown with a dorso-median series of black spots; head and nape and dark brown to black; lips are yellowish; a yellow transverse bar is present between the eyes and two broad yellow bars form a border to the dark area of the nape; ventrum is yellowish; each ventral shield is with a black dot near its outer border.

*Distribution* : India : Gujarat (Vadodara and Bharuch districts); West Bengal; Peninsular India.

*Elsewhere* : Sri Lanka.

*Habits and habitat* : It is a terrestrial, rock dwelling, diurnal snake, feeds on small lizards especially the geckos and scinks.

*Status* : Vulnerable on account of the habitat loss.

### REDDISH-BROWN BLACK-HEADED SNAKE

#### 177. *Sibynophis bistrigatus* (Gunther 1868)

1868. *Ablabes bistrigatus* Gunther, *Ann. Mag. Nat. Hist.*, (4)i : 417.

1943. *Sibynophis bistrigatus*, Smith, *Fauna Brit. Ind.*, 3 : 279.

The maximum length is upto 300 mm, tail 80 mm in females, the dorsal colour is light reddish brown, with a black stripe along the side of the body; top of the head and nape black; a pair of yellow spots on the neck; lower parts uniform yellow. 9 or 10 supralabials, the 4th, 5th and 6th touching the eye; two anterior temporals, the lower wedged in between 7th and 8th (or 6th and 7th) supralabials; ventrals 184-186; subcaudals 73-75. Hemipenis is like *S. subpunctatus*.

*Distribution* : India : Nicobar Islands (Camorta).

*Elsewhere* : Myanmar (Prome, Pegu).

*Status* : A rare snake, known only by the few examples.

### CANTOR'S BLACK-HEADED SNAKE

#### 178. *Sibynophis sagittarius* (Cantor 1839)

1939. *Calamaria sagittaria* Cantor, *P.Z.S.*, : 49.

1943. *Sibynophis sagittarius*, Smith, *Fauna Brit. Ind.*, 3 : 280.

The maximum length of the snake reaches upto 305 mm; tail 250 mm; dorsal colouration is light brown with a vertebral series of black dots; head and nape dark brown or black, with a large elongate oval patch of yellow on each side of the back of the head; snout variegated with yellow; a yellow border to the nuchal patch behind; lower parts yellow, with a black dot on the outer edge of each ventral shield. Snout broader and more rounded; loreals small, may be absent, 7 or 8 supralabials, the 3rd and 4th or the 3rd, 4th and 5th touching the eye; normally one large anterior temporal, touching the 5th and 6th or 6th and 7th supralabial; ventrals 197-238; subcaudals 54-70. Hemipenis is not known.

*Distribution* : Western Himalayas; Ganges basin; lower Bengal. The species is available in Madhya Pradesh.

*Elsewhere* : Bangladesh.

*Status* : Available throughout the range but nowhere common.

Genus 38. *Amphiesma* Dumeril and Bibron 1854

1854. *Amphiesma* Dumeril & Bibron, *Erp. Gen.*, 7 : 724.

1960. *Amphiesma*, Malnate, *Proc. Acad. Nat. Sci. Phila.*, 112 : 41-71.

This genus, includes slender bodies, elongated keelbacks, in which head is quite distinct from the neck; maxillary teeth are from 19-25, in a continuous series gradually become larger posterior by or the last two teeth are abruptly enlarged; internasals shields are broader on the anterior aspect; nostrils are lateral in position; scales round the body are in 19 rows, keeled; hemipenis and sulci spermaticus are simple. The genus includes more than 40 species distributed eastern Russia to northern Australia, Asia. In Indian region 8 species are available out of which one is available in India and Pakistan. This genus was separated from *Natrix* by Malnate in 1960, on the basis of the character mentioned above.

Key to the species of genus *Amphiesma*

No nuchal groove

- A. Two light stripes down the back maxillary teeth 21-24 ..... *A. stolata*
- B. No light stripes down the back. Maxillary teeth 19-21; ventrals 172-235 .....  
..... *A. platyceps*
- C. Subcaudals all entire ..... *A. xenura*
- D. Subcaudals paired or only some of them single
  - 1. Scales in 17 rows at mid-body. Anterior temporal 1. .... *A. venningi*
  - 2. Scales in 19 rows at mid-body
    - a. Two supralabials touching the eye; anal entire
      - i. 7 or 8 supralabials; one anterior temporal ..... *A. nicobarensis*
      - ii. 9 supralabials; two anterior temporals ..... *A. peali*
    - b. Normally three supralabials touching the eye; anals 2.
      - i. Supralabials normally 9; no dorsolateral bands; no black streak from the eye to the gape of the mouth ..... *A. modesta*
      - ii. Supralabials 8; two yellowish, black-edged longitudinal bands on the back; a black streak from the eye to the angle of the mouth ..... *A. parallela*
      - iii. Supralabials 9; maxillary teeth 26-30; labials black with light centers .....  
..... *A. khasiensis*

Maxillary teeth more than 25; ventrals not more than 171.

- A. Costal scales with bidentate tips.

- i. A white chevron mark on the nape; lips white, without stripes .....  
..... *A. chrysarga*
  - ii. Labials yellow, suture edged with black; an oblique black-edged streak from the eye to the gape;
  - iii. No chevron mark on the nape; lips white, with a black oblique stripe below the eye and another from behind the eye to the angle of the mouth .....  
..... *A. nigrocincta*
- B. Costal scales with rounded margins; a white or yellow transverse line across the back to the head; a white dot on each side of the frontal; lips below the eye without stripes ..... *A. monticola*

### 179. *Amphiesma venningi* (Wall 1910)

1910. *Natrix venningi* Wall, *J. Bombay N. H. S.* **xx**, : 345 (Chin Hills, Burma; London).  
 1940. *Natrix venningi taronensis*, Smith, *Rec. Ind. Mus.* **xiii**, : 482 (Pangnamdim : London).  
 1943. *Natrix venningi*, Smith, *Fauna Brit. Ind. Rept.*, **3** : 286.  
 1984. *Paranatrix venningi*, Mahendra, *Ann. Zool.*, **22** : 245.

This species is distinguished into two subspecies which are having difference in colouration, ventral scale number and caudal scale number, are described here. The general specific characters are : The maximum length in males reaches upto 605 mm, tail 195 mm, while in females 680 mm, tail 225 mm. Maxillary teeth 27-32, gradually enlarge posteriorly; nostrils are lateral in position or directed slightly upwards; internasals truncate and slightly narrowed anteriorly, as long as the prefrontals; preoculars are 2 in most snakes; temporals 1+1 or 1+2; supralabials are 9, fourth, fifth and sixth touch the eye; body is slender; scales in 17 rows, feebly keeled. The outer row smooth. The hemipenis extends upto the 8th caudal plate; not forked.

#### 1. *Amphiesma venningi venningi*

Dorsum is very dark greyish brown, with an indistinct chequering of small squarish black spots; a dorsolateral chain of yellow spots in the juveniles sometimes persisting into adults also; ventrum is yellowish, the shields heavily edged with dark brown or entirely dark brown or black; head above with or without light vermiculations; an incomplete yellow may be present or absent.

Ventral shields 158-172; subcaudals, 117-140.

*Distribution* : Upper Myanmar (Chin Hills, Bhamo district, Nam-ti Valley).

*Habits and habitat* : Inhabits the hilly areas. According to Wall food comprises tadpoles.

*Status* : Very common.

## 2. *Amphiesma venningi taronensis*

Dorsum is dark-greyish brown with an indistinct chequering of small, squarish black spots; a dorsolateral chain of small yellow spots; ventrum is mottled with black and yellow anteriorly, entirely black posteriorly.

Ventrals, 166-178; subcaudals 84-106.

*Distribution* : Upper Myanmar (10 specimens obtained by Mr. Ronald Kaulback at Pangnamdin (lat. 27°42'N; long 97°54'E) and Aliwang, Taron Valley (lat. 27°42'N; long 98°08'E), places north east of Fort Hertz.

*Habits and habitat* : Inhabit small hill streams.

*Status* : Insufficiently known.

### OLIVE-BROWN KEELBACK

#### 180. *Amphiesma parallela* (Boulenger 1890)

1890. *Tropidonotus parallelus* Boulenger, *F.B.I.*, : 345.

1960. *Amphiesma*, Malnate, *Proc. Acad. Nat. Sci. Phila.*, **112** : 41-71.

The maximum length of the snake reaches 570 mm, tail 140 mm in males and 635 mm, tail 135 mm in females. Dorsal colouration is olive-brown the scales edged with blackish, with two yellowish, black-edged dorsal bands running along the back and tail; a short yellow longitudinal streak behind the occiput; a black streak from the eye to the commissure of the mouth; labials yellow; ventrals and subcaudals uniform yellow or with a black dot on each side. Maxillary teeth 20 to 24. Preoculars 1, 2, or 3. Postoculars 2. Temporals 1+1, 1+2 or 2+2. Supralabials 8, the 3rd, 4th and 5th touching the eye. Scales in 19 : 19 : 17 rows, the tips more or less distinctly bidentate, more or less strongly keeled. Ventrals 162-175. Subcaudals 73-110. Anals 2. Hemipenis is forked, reaches upto 8th caudal plate.

*Distribution* : India, Sikkim, Meghalaya (Khasi Hills).

*Elsewhere* : Myanmar (Hilly areas of north); Yunnan; Tong-king (Fan-Si Pan Mountains).

*Status* : A common snake in throughout its range.

### BLACKISH-BROWN KEELBACK

#### 181. *Amphiesma khasiensis* (Boulenger 1890)

1890. *Tropidonotus khasiensis* Boulenger, *F.B.I.*, : 344 (Khasi Hills; London).

1943. *Natrix khasiensis*, Smith, *Fauna Brit. Ind.*, **3** : 289.

1960. *Amphiesma*, Malnate, *Proc. Acad. Nat. Sci. Phila.*, **112** : 41-71.

The maximum length of the snake reaches upto 570 mm; tail 195 mm in males and 600 mm, tail 190 mm, in females. The dorsal colouration is dark-gray or blackish-brown, with or without indistinct light dorso-lateral stripes or series of spots; ventrals and subcaudals are yellowish, the outer margins are brown, like the dorsal scales, or with a brown spot; top of head with light vermiculations and usually 2 small spots, one on each side of the interparietal suture; labials are white or yellow in the middle, black on the borders; the yellow colour of the lips may be continued backwards as a series of spots on each side of the neck. Maxillary teeth are 26-28, gradually enlarged posteriorly; nostrils are lateral; internasals truncate anteriorly postoculars 1 or 2; temporals 1+1 or 1+2; supralabials 9, rarely 8, fourth, fifth and sixth touch the eye; body is quite slender; scales in 19 rows, more or less strongly keeled, except the outer row, which is smooth or feebly keeled; ventrals 145-155; subcaudals 94-110. Hemipenis extends upto the 8th caudal plate and forked at the tip.

*Distribution* : India : Assam (Garo and Khasi Hills).

*Elsewhere* : Myanmar (upper Burma, Abor country; Nawng Hkai in the Nam Tamai Valley; Bhamo district); Tong-king (Chapa, Tam-dao).

*Status* : Available in all the parts of its range but is quite common in the Khasi and Kachin Hills.

**BROWN- BLACK SPOTTED KEELBACK**  
182. *Amphiesma modesta* (Gunther 1875)

1875. *Tropidonotus modestus* Gunther, *P.Z.S.*, : 232 (Khasi Hills; London).

1943. *Natrix modesta*, Smith, *Fauna Brit. Ind.*, 3 : 290.

1960. *Amphiesma*, Malnate, *Proc. Acad. Nat. Sci. Phila.*, 112 : 41-71.

The maximum length reaches upto 550 mm tail 185 mm; in males and 600 mm, tail 140 mm, in females. The dorsal colouration is brown with small black spots regularly arranged and a dorsolateral series of small yellow spots which may be united to form an indistinct stripe. Head with a yellow stripe on each side, starting behind the eye and converging towards its fellow on the neck, labials edged with black. Top of the head with indistinct vermiculations. Lower parts yellowish. Ventrals with black spots, sometimes forming continuous lines or almost entirely powered with black. Maxillary teeth 28-32, gradually enlarged posteriorly; nostrils are lateral, internasals as long as or nearly as long as the prefrontals, truncate anteriorly; postocular 2; temporals 1+1 or 1+2; supralabials 9, fourth, fifth and sixth touch the eye; scales are in 19 rows, feebly or distinctly keeled, the outer 1-3 rows are smooth; ventrals 143-168; subcaudals 83-132; anal 2. Hemipenis reaches to the 8th caudal plate, forked at the tip.

*Distribution* : India : Assam (Khasi Hills).

*Elsewhere* : Myanmar (upper parts, Kachin and Bhamo districts); Thailand (Northern parts); Cambodia (Kamchay Mts.); Annam (Southern part; Langbian Plateau); Laos (Upper part, Chieng-Khoung).

*Status* : A widely distributed species, inhabiting the hilly areas (2000 to 5000 feet altitude).

#### BARK-BROWN KEELBACK

##### 183. *Amphiesma peali* (Sclater 1891)

1891. *Tropidonotus pealii* Sclater, *J. A. S. Bengal*, **9** : 241.

1943. *Natrix peali*, Smith, *Fauna Brit. Ind.* **3** : 291.

1960. *Amphiesma*, Malnate, *Proc. Acad. Nat. Sci. Phila.*, **112** : 41-71.

The maximum length of this snake reaches upto 525 mm tail 130 mm in males. The color is brown, with a narrow light dorsolateral stripe and a broader pale one occupying scale-rows 1 and 2. Each ventral and caudal shield with a yellow spot at its outer margin and an indistinct yellow median series of spots. Head dark brown above, the rostral and labials yellow, edged with brown. Maxillary teeth 19 to 21. Preocular 1. Postoculars 2 or 3. Anterior temporals 2. Supralabials 9, the 4th and 5th touching the eye, the 6th excluded by the lowest postocular. Scales in 19 : 19 : 17 rows, strongly keeled except the outer row, which may be smooth. All the caudal scales strongly keeled. Ventrals 142-145. Subcaudals 75-77, the anterior 4 to 7 single. Anal 1. Hemipenis extends upto 9th caudal plate; not forked.

*Distribution* : India : Assam (Sibsagar).

*Status* : A rare snake, known only from two male examples.

#### DARK OLIVE BROWN KEELBACK

##### 184. *Amphiesma xenura* (Wall 1907)

1907. *Tropidonotus xenura* Wall, *J. Bombay N.H.S.*, **17** : 616 (type-locality not known; type lost).

1943. *Natrix xenura*, Smith, *Fauna Brit. Ind.*, **3** : 292.

1960. *Amphiesma*, Malnate, *Proc. Acad. Nat. Sci. Phila.*, **112** : 41-71.

The maximum length reaches upto the 630 mm, tail 190 mm, in males and 590 mm, tail 160 mm in females. The dorsal colouration is dark-olive brown with indistinct narrow cross-bars or series of spots. Whitish or yellowish on the ventral aspect with dark brown squarish spots at the outer margins of the ventrals, labials are white, the suture are black edged. A white streak from behind the angle of the mouth on to the neck. Maxillary teeth are 22 or 23, gradually enlarged posteriorly; nostril is lateral, internasals as long as or shorter than the prefrontals; preocular 1; postoculars 3; supralabials 9 or 10, third and fourth touch the eye; temporals 2+2; body scales are

in 19 rows, all are strongly keeled; ventrals 158-165; subcaudals 82 in females and 105 in males, all are entire; anal 1 or 2. Hemipenis extends upto the 8th caudal plate, not forked.

*Distribution* : India : Assam (Cherrapungi, Khasi Hills).

*Status* : A rare species, known only from 3 examples.

### STRIPED KEELBACK

#### 185. *Amphiesma stolata* (Linnaeus 1758)

1758. *Coluber stolatus* Linnaeus, *Syst. Nat.*, : 219.

1943. *Natrix stolata*, Smith, *Fauna Brit. Ind.*, 3 : 303.

1960. *Amphiesma*, Melnate, *Proc. Nat. Sci. Phila.*, 112 : 41-71.

The striped keelback reaches to a length of about 350 mm and bears the following characters : Maxillary teeth 21-24, last two are enlarged; supralabials 7 or 8, 3rd to 5th or 3rd and 4th touching the eye; loreal 1; one pre and 3 postocular are available temporals are generally 1+2, in certain individuals are 1+1; scales round the body are in 19 rows, which are keeled except the outer most row, which is smooth; in certain individuals only 17 rows of scales are available at mid-body; ventral shields are from 118-158; subcaudal shields are from 50-89; anal shield is divided; hemipenis extends upto the 8th caudal plate, forked at anterior tip, spines are present on the complete organ except at the basal part. Dorsal colouration is olivaceous or olive-brown or somewhat greenish; with a pair of pale yellow stripes, which sometimes break up into spots in the anterior region of the body; the space between these stripes is with dark-brown to black spots, which are extremely distinct in the anterior region; dorsal aspect of head is with a tinge or bluish gray colour on olive background, frontal and parietal region is with a black border; there is a black V-shaped mark on the neck; black streaks are present, in front and underside of the eye and from postocular to angle of mouth; ventrum is whitish, somewhat creamy, in most scales small black spots are present at the tips of the ventral shields.

*Distribution* : India : Gujarat (Gandhinagar, Vadodara, Panchmahals, Dangs and Bhavnagar district). Whole of India including the Andaman Islands.

*Elsewhere* : Sri Lanka, Pakistan, Southern China, Hainan and Vietnam.

*Habits and habitat* : This diurnal terrestrial snake is available in moist grassy areas, under stones, under wooden logs, grassy plots, under the fallen leaves of trees and in gardens. It is a gentle snake and never makes an attempt to bite even on mishandling. Its food comprises frogs, toads, small mammals and lizards. It has been reported for laying eggs in May, generally it lays about 10 eggs in a single clutch, the incubation period is about 20 days.

*Status* : Most common throughout its range.

## MOUNTAIN KEELBACK

186. *Amphiesma platyceps* (Blyth 1954)

1854. *Tropidonotus platyceps* Blyth, *J.A.S. Bengal*, 23 : 297 (Assam and Darjeeling; Calcutta).

1943. *Natrix platyceps*, Smith, *Fauna Brit. Ind.*, 3 : 305.

1960. *Amphiesma*, Malnate, *Proc. Acad. Nat. Sci. Phila.*, 112 : 47-71.

The maximum length reaches upto 880 mm tail 225 mm, in males and 735 mm, tail 165 mm i.e, in females. Olive brown above, yellowish below, with a very variable pattern of blackish spots or lines. Frequently with two white black-edged parallel lines or an elliptic mark on the head or a white black-edged streak on each side of the head or a black line from the eye to the gape of the mouth. Maxillary teeth 19 to 21; body slender; temporals 1+1, rarely 2+2; supralabials 8, the 3rd, 4th and 5th touching the eye; scales in 19 rows, more or less distinctly keeled, those of the outer rows often smooth; ventrals 172-235; subcaudals 75-109; anals 2. Hemipenis extends upto 8th caudal plate, not forked.

*Distribution* : India, The Himalayas from Kashmir in the West to Assam (Abor and Khasi Hills) in the east.

*Status* : A common snake in the Darjeeling district of West Bengal and inhabits between 5000 to 6000 feet altitude.

## BEDDOM'S OLIVE-BROWN KEELBACK

187. *Amphiesma beddomei* (Gunther 1864)

1864. *Tropidonotus beddomei* Gunther, *Rept. Brit. India*, : 269, pl. 22, fig. E. (nom. nov. for *vittatus* preoc.)

1943. *Natrix beddomei*, Smith, *Fauna Brit. Ind.*, 3 : 306.

1960. *Amphiesma*, Malnate, *Proc. Acad. Nat. Sci. Phila.*, 112 : 41-71.

The maximum length reaches upto 525 mm. tail 140 mm, in males and 690 mm, tail 210 mm, in females. The dorsal colouration is olive-brown or brown; a series of yellow spots, each one between two black spots or short transverse bars, along each side of the back; belly whitish, uniform or closely dotted with brown on the sides; labials are yellow, the sutures edged with black; an oblique, yellow, black-edged streak from the eye to the gape usually present. Top of the head in the young are very light brown, speckled with dark brown on the vertex and with a white or yellow transverse bar behind the parietals; in adults head becomes entirely brown, but the transverse bar usually remains. In juveniles the yellow spots upon the back are more prominent than the black spots; in the adult snakes black spots are more in evidence. In aged snakes the markings fade out and the complete back becomes uniformly brown. Maxillary teeth are 28-34, the last two abruptly become strongly enlarged; nostrils are lateral; preocular 1; temporals 1+2 or 1+3, rarely 2+2; supralabials 8 or

9, third to fifth or fourth to sixth touch the eye; body is slender, scales in 19 rows, distingly keeled, the outer one or two rows are smooth; ventrals 140-150; subcaudals 62-82. Hemipenis extends upto the 12th caudal plate, forked near the tip.

*Distribution* : India : Western Ghats south to Mahableswar (lat. 17°N.); Nilgiri Hills in Tamil Nadu.

*Habits and habitat* : In habits between 3000-7000 feet. Its main food comprises frogs and toads.

*Status* : A common snake in its complete range.

### GREEN KEELBACK

#### 188. *Amphiesma monticola* (Jerdon 1853)

1853. *Tropidonotus monticolus* Jerdon, *J.A.S. Bengal*, **22** : 530 (Wynad; type lost).

1943. *Natrix monticola*, Smith, *Fauna Brit. Ind.*, **3** : 308.

1960. *Amphiesma*, Malnate, *Proc. Acad. Nat. Sci. Phila.*, **112** : 41-71.

*Total length* : Male 380 mm, tail 118 mm; female 475 mm, tail 150 mm. Green above, with broad black cross-bars or quadrangular spots, interrupted by two series of light dorsolateral spots or lines. Lower parts white. A white or yellow line or collar across the back of the head. A white dot on each side of the frontal. Pre and postoculars and labials below the eye white. Throat and sides of the neck yellow in life. Maxillary teeth 33 to 35. Body rather stout. Temporals 2+2 or 2+3. Supralabials 8 or 9, the 3rd, 4th and 5th or the 4th, 5th and 6th touching the eye. Scales in 19 rows, all distinctly keeled, except the outer row, which may be smooth. Ventrals 132-145. Subcaudals 78-92. Anals 2. Hemipenis extends upto the 9th caudal plate, forked near the tip.

*Distribution* : India : The Western Ghats from Talevadi, Goa Frontier to Travancore.

*Status* : A rare species.

### Genus 39. *Xenochrophis* Gunther 1864

1864. *Xenochrophis* Gunther, *Rept. Brit. Ind.*, : 273 (type *cerasogaster*).

1943. *Xenochrophis*, Smith, *Fauna Brit. Ind.*, **3** : 317.

1965. *Xenochrophis*, Malnate and Minton, *Proc. Acad. Nat. Sci. Phila.*, **117** : 19-41.

This genus comprises fresh water snakes with cylindrical body; head quite distinct from the neck; snout long; eyes are moderately large with round pupil; nostril is dorsolateral; pierced into a single nasal, directed outwardly upward; scales round the body are in 19 or 17 rows, these are strongly keeled and are devoid of the apical pits; ventral shields are somewhat rounded; tail is moderately long, subcaudal shields are paired; maxilla is with 20-31 teeth arranged in a continuous series, posterior or median teeth enlarged; internasal shields narrowed anteriorly; hemipenis and sulci spermaticus forked. Malnate (1960) separated this genus from *Natrix*. Recently Malnate

and Minton (1965) has united this genus with *Fowlea*, but this can be regarded as a distinct and independent genus which includes 4 species, two are available in India and Pakistan and the remaining two are distributed in China, Taiwan, Malaysia and Sri Lanka.

### Key to the species of genus *Xenochrophis*

- A. Head with 2 oblique black stripes, one below and the other behind the eye, ventrals 122-158; subcaudals 60-97 ..... *X. piscator*  
 B. Head without the black streaks, Ventrals 140-159; subcaudals 63-76 .....  
 ..... *X. cerasogaster*

### CHECKERED KEELBACK

189. *Xenochrophis piscator* (Schneider 1799)

(Text figs. 112 & 113)

1799. *Hydrus piscator* Schneider, *Hist. Amph.*, 1 : 247.

1943. *Natrix piscator*, Smith, *Fauna Brit. Ind.*, 3 : 293.

1965. *Xenochrophis piscator* Malnate and Minton, *Proc. Acad. Nat. Sci. Phila.*, 117 : 19-41.

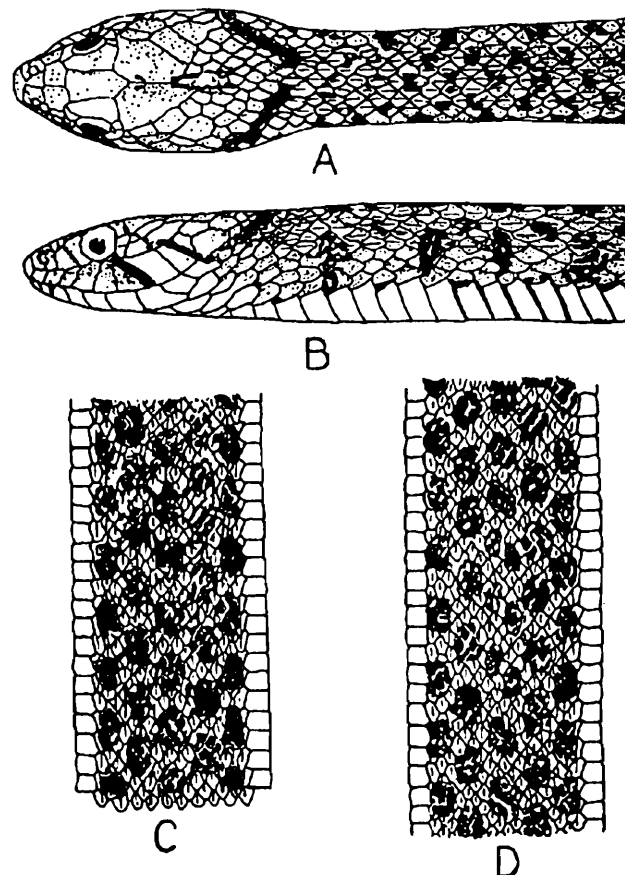
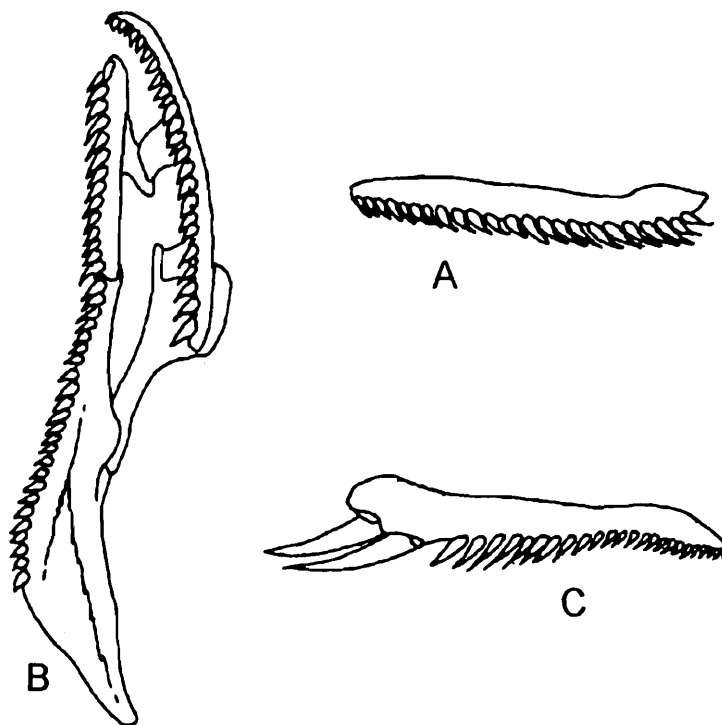


Fig. 112. *Xenochrophis piscator* (Schneider). A. Dorsal pattern of head and neck, B. Lateral pattern of head and neck, C and D. Dorsal pattern of body.

The checkered keelback is the commonest freshwater, fairly robust snake whose length hardly exceeds a meter; the maximum recorded length is 1.48 m. The head is oval and distinct from neck, slightly flattered, with a bluntly pointed snout. The other main characters are as follows : Rostral wider than high; nostrils are between nasals; only one large loreal; eyes are moderately large, with round pupil; preocular one or two (rarely); postocular three, rarely four; anterior temporals are long and narrow, usually two in number; posterior temporals are 2 to 4 in number; eight to ten upper labials (fourth and fifth touching the eye); nine to ten lower labials; body cylindrical; costals are 19 at the middle of the body, lateral rows are smooth, median rows are feebly keeled; ventrals are 122-158; subcaudals 60-97; anal is divided. Hemipenis and sulci spermaticus are forked. The colour of the body is much variable, may be yellowish, olive, light green, gray, brown with a reddish tinge, with five rows of small light black spots, bars which are generally narrower than interspaces separating them, quincunally arranged; head olive brown above, with two oblique black streaks, one below, the other behind the eye. The dorsal black markings are arranged in five transverse series (a ventral, 2 dorsolateral and 2 lateral) and form a chess-board like pattern; belly is creamy white, usually with small black spots on the lateral margins of ventrals.

*Distribution* : India : Gujarat (Valsad, Bharuch, Dangs, Vadodara, Gandhinagar, Bhavnagar, Surendranagar, Viramgam districts). Whole of India (including the Himalayas and Andamans). It is widely distributed in the complete Ganga basin.

*Elsewhere* : Distributed in the complete Malayan region, southern China, Taiwan, Bangladesh, Borneo, Burma, Sri Lanka, Pakistan and Indo-Chinese subregion.



**Fig. 113.** A. Maxilla and B. palato-maxillary arch of *Xenochrophis piscator* C. Maxilla of *Rhabdophis subminiata*.

*Habits and habitat* : The checkered keelback is a diurnal, vicious, agile, most common freshwater snake inhabiting marshy areas, pools of water, ditches, canals and shallow edges of rivers with plenty of aquatic vegetation. The hibernation takes place from December to January. Its main food comprises small fishes and frogs. Courtship and mating takes place in late September to October; numerous gravid females are seen in November. The egg laying takes place from late November to the end of May. Clutch size varies from 8 to 90 (16 × 28 mm) eggs and the incubation period ranges from 35 to 55 days.

*Status* : Common throughout its range.

#### DARK-BELLIED MARSH SNAKE

#### 190. *Xenochrophis cirasogaster* (Cantor 1839)

(Text fig. 114)

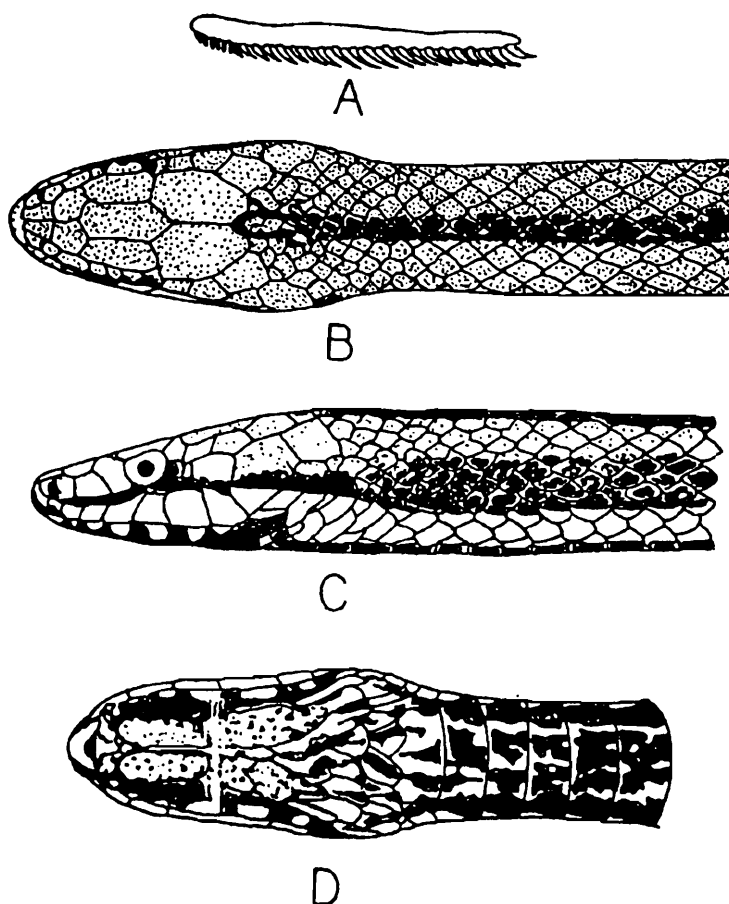
1939. *Psammophis cirasogaster* Cantor, *P.Z.S.*, : 52 (Type locality, near Calcutta; col. sketch in Bodleian Library).

1965. *Xenochrophis cirasogaster*, Malnate and Minton, *Proc. Acad. Nat. Sci. Phila.*, 117 : 19-41.

The maximum length reaches to 668 mm, tail 120 mm in males and 973 mm tail 140 mm in females. Olive-brown to green above, with or without more or less distinct darker spots; lower parts reddish, dappled with brown or purplish black, with small whitish spots particularly on the fore-part of the body; a bright yellow line, white in the young, along the outer margins of the ventrals, bordered above with chocolate and below, in life, with red; lips yellow, edged with chocolate above, these two colours continuous with those upon the flanks (Malcolm A. Smith, 1943, pp. 317-318). Rostral large, plate-like, about as broad as high. Internasals narrowing towards their anterior borders, which are obtusely rounded. Frontal long and narrow, constricted in the middle, where it is about as broad as the supraoculars. Loreal single, enlarged. Preocular 1. Postoculars 2 or 4. Anterior temporals usually 2. Supralabials usually 9, the 4th touching the eye, the 5th excluded by a subocular, Scales in 19 : 19 ; 17 rows, the tips more or less distinctly bidentate. Ventrals 140-159. Subcaudals 60-79. Anals 2. Hemipenis extends upto the 12th caudal plate, forked near the tip; it is calyculate and bears spines all over; the cups are short and of uniform size; the spines project from the bases of the cups.

*Habits and habitat* : These snakes are abundant in quite shallow water with much emergent vegetation such as lotus, Ipomoea and water-lily. The snakes are diurnal, shy and active. They are usually found in grass at the edge of marshes or resting on lily pads or other plants and swim away rapidly when alarmed. None has been taken during the winter and they are difficult to find during the hot, dry spring and early summer. They are plentiful from the end of the rains until mid-November.

"Two specimens in Jeromie A. Anderson's collection laid clutches of 20 eggs each during the first week of April. The eggs were similar to those of *X. piscator* but



**Fig. 114.** *Xenochrophis cerasogaster* (Cantor). A. Maxilla., B, C and D. Dorsal, lateral and ventral pattern of head and neck.

slightly smaller and more globular. A juvenile 250 mm in total length was collected May 31.

"These snakes rarely bite when captured, but make poor captives. They feed poorly, although an occasional individual will take small fish or frogs. Fish were found in stomachs of two individuals collected in the wild. Wall (1907) reported that they feed largely upon shrimp." (Minton, 1966, pp. 136-137).

*Distribution* : India : Assam (Khasi Hills; Goalpara); Bengal, Uttar Pradesh (Fyzabad).

*Elsewhere* : West Pakistan, Nepal and Malaya (? Penang).

*Status* : A common snake.

#### Genus 40. *Rhabdophis* Fitzinger 1843

1843. *Rhabdophis* Fitzinger, *Syst. Rept.*, : 27 (type *subminiatus*).

1943. *Natrix*, Smith, *Fauna Brit. Ind.*, 3 : 281.

Maxillary teeth 19 to 35, the last two strongly enlarged, recurved, but not grooved, separated by a slight or large interspace from the preceding shorter teeth. Body more or less elongate, cylindrical. Head distinct from the neck. Eye large, with round pupil. Nostrils lateral. Internasals roughly quadrangular. Loreal 1. Preocular 1 (rarely 2). Scales in straight rows, more or less distinctly keeled. Ventrals rounded. Subcaudals paired. Anal divided.

### Key to the species of the genus *Rhabdophis*

A nuchal groove present.

Three supralabials touching the eye; no yellow collar ..... *R. subminiata*

Two supralabials touching the eye; a yellow or orange collar (Sometimes interrupted) behind the head ..... *R. himalayana*

#### 191. *Rhabdophis nuchalis* (Boulenger 1891)

1891. *Tropidonotus nuchalis* Boulenger, *Ann. Mag. Nat. Hist.* (6) vii, p. 281 (based on Gunther's specimens), and *Cat. Sn. Brit. Mus.*, I, 1893, : 218, pl. xiii, fig. 1.

1943. *Rhabdophis nuchalis*, Smith, *Fauna Brit. Ind. Rept.*, 3 : 284.

The maximum length of this snake reaches upto 665 mm, tail 145 mm in males and 900 mm, tail 160 mm. Dorsum is olivaceous or greenish, the scales in some individuals are edged with black; an indistinct dorsolateral chain of small yellow spots are available in few snakes; ventrum is pale greenish, uniform or the scales spotted or edged or thickly powdered with black (mainly on the posterior body and tail); juveniles are with a complete yellow colour. A sacculated type nuchal gland is present; a nuchal groove is available, the scales on each side of it more or less distinctly enlarged and paired; maxillary teeth 18-23, which gradually enlarge posteriorly; nostrils are lateral; internasals truncate anteriorly; preocular 1; temporals 1+1 or 1+2; supralabials 6, third and fourth touch the eye, fifth is longest; infralabials are 4, touching the anterior genials, which are broader but shorter than the posterior. Body is stout; scales in 17 rarely 19, rows on the neck, 15 rarely 17 at mid-body, more or less distinctly keeled except the neck, 15 rarely 17, at mid-body, more or less distinctly keeled except the outer row, which is smooth, ventrals 139-160; subcaudals males in 52-65, females 41-52. Hemipenis extends upto the 11th-14th caudal plate, forked near the tip.

*Distribution* : Upper Myanmar (Bhamo district; Nam Tamai and Adung Valleys); North-East Tibet (Di-Chu Valley); Yunnan, Tong-King (Col des Nuages); Western China.

*Habits and habitat* : Inhabits hilly areas, generally at high elevations, 5000-6000 feet.

*Status* : Common in certain areas of its range.

## HIMALAYAN KEELBACK

192. *Rhabdophis himalayana* (Gunther 1864)

(Text fig. 115)

1864. *Tropidonotus himalayanus* Gunther *Rept. Brit. India*, p. 265, pl. xxii, fig. H (Sikkim and Nepal : London).

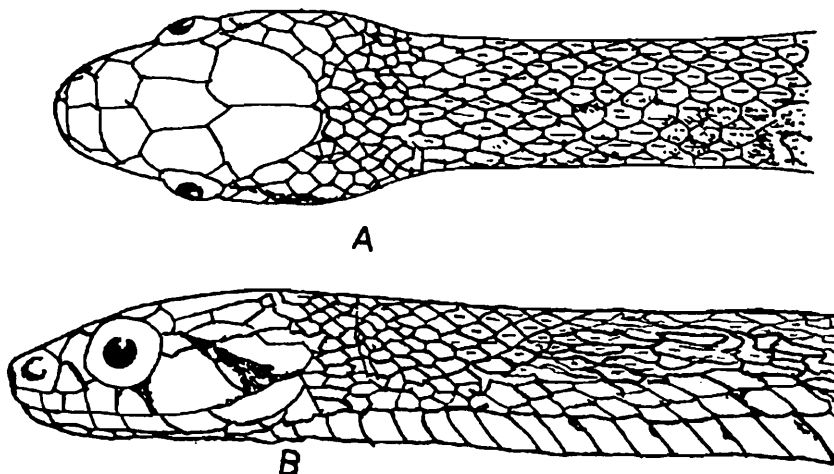
1943. *Natrix himalayana*, Smith, *Fauna Brit. Ind.*, 3 : 300.

*Total length* : Male 820 mm, tail 215 mm; female 125 mm, tail 305 mm. Olive above, almost always with two dorsolateral series of small yellow spots or narrow cross-bars, rarely absent. Lower parts yellowish, grayish or blackish, a yellow or orange collar usually interrupted in the middle and succeeded by a dark cross-bar or triangular patch. Labials yellow with black sutures. Sometimes two oblique black bars, one below and the other behind the eye. Neck and fore-body sometimes with a reticulation of black and yellow, the colors confined very largely to the interstitial skin. A nuchal groove, more or less distinct, present; the three median rows of scales on the nape narrower than the others. Internasals as long or nearly as long as the prefrontals. Temporals 2+2 or 2+3. Supralabials 8 or 9, two of them (the 4th and 5th or the 5th and 6th) touching the eye. Scales in 19 rows at mid-body, 17 before vent, strongly keeled, those of the outer row feebly keeled. Ventrals 157-177. Subcaudals 78-97. Anals 2. Hemipenis extends upto the 7th caudal plate, not forked; complete organ bears large spines which are comparatively longer at the distal end than which are present at the proximal end; at the base of the penis on either side of the sulcus are two enormously large spines.

*Distribution* : India : Eastern Himalayas 'as far west as Sikkim; hills in Assam.

*Elsewhere* : Upper Burma (Myanmar).

*Status* : Available in reasonable number in throughout its range.



**Fig. 115.** *Rhabdophis himalayana* (Gunther). A. Dorsal pattern of head and neck, B. Lateral pattern of head and neck.

193. *Rhabdophis subminiata* (Schlegel 1837)

(Text fig. 113)

1837. *Tropidonotus subminiatus* Schlegel, *Phys. Serp.*, ii : 313 (Java : Leiden).1943. *Natrix subminiata*, Smith, *Fauna Brit. Ind.*, 3 : 302.

*Total length* : Male 950 mm, tail 235 mm female 1300 mm, tail 300 mm, olive brown or greenish above, almost uniform or with black and yellow reticulations, the color being confined to the interstitial skin and the edges of the scales, an oblique black bar below the eye. Belly yellowish. Young with a jet-black cross-bar or triangular mark on the nape, bordered with yellow below. A nuchal groove and gland present, the scales on each side of the groove being more less distinctly enlarged and paired or not at all. Internasals subquadrangular, as long or nearly as long as the prefrontals. Temporals 2+2 or 2+3. Supralabials 8 or 9, three of them touching the eye. Scales in 19 rows at mid-body, 17 before vent, strongly keeled, the outer row smooth. Ventrals 132-175. Subcaudals 61-97. Anals 2. Hemipenis extends upto the 15th caudal plate 2/3 part of the organ in forked, there are no basal spines.

*Distribution* : India : The eastern Himalayas; hills in Assam.

*Elsewhere* : Burma, the Indo-Chinese subregion as far as Sikkim in the north-west, Southern China, Hainan, Hong Kong and the Malay Peninsula and Archipelago.

*Status* : Common snake.

194. *Rhabdophis nigrocincta* (Blyth 1856)1856. *Tropidonotus nigrocinctus* Blyth, *J. A. S. Bengal*, xxiv : 717 (Pegu, Burma : Calcutta).1960. *Rhabdophis nigrocincta*, Malnate, *Proc. Acad. nat. Sci. Philadelphia*, 112 : 41.

*Total length* : Male 880 mm, tail 255 mm; female 840 mm, tail 185 mm.

Dorsal colour is orange-green or brownish with or without narrow black cross-bars, sometimes interrupted on the mid-line. Whitish or grey below. Lips with two black oblique stripes, one below the eye, the other from behind the eye to the angle of the mouth. Young with the nape and the hinder part of the head white, edged in front and behind with black.

Maxillary teeth 27 to 29.

Temporals 2+2, rarely 1+2. Supralabials 8 or 9, the 3rd and 4th or the 4th, 5th and 6th touching the eye. Scales in 19 rows, with bidentate tips, all distinctly keeled except the outer row, which is usually smooth. Ventrals 150-171. Subcaudals 80-97. Anals 2. Hemipenis extends upto 8th caudal plate, forked for half its length.

*Habits and habitat* : This is almost active, graceful, diurnal snake feeding upon frogs and fish.

*Distribution* : Myanmar (Thandaung, Toungoo district; Tenasserim), Thailand and Tong-king.

*Status* : Available in abundance.

195. *Rhabdophis chrysarga* (Schlegel 1837)

1837. *Tropidonotus chrysargus* Schlegel, *Phys. Serp.*, ii, : 312, pl. xii, figs. 6 and 7.

1960. *Rhabdophis chrysarga*, Malnate, *Proc. Acad. nat. Sci. Philadelphia*, 112 : 41.

*Total length* : Male 650 mm, tail 145 mm; female 715 mm, tail 195 mm.

Dorsal colour is olive-brownish, greenish or greyish. Dorsum with white or yellow transverse bars with blackened outer edges and black vertebral inter connections. Lower parts whitish, usually with a black spot at the outer margin of each ventral shield or with the ventrals heavily spotted with black. Nape with a white chevron mark, which is always distinct in the young.

Maxillary teeth 27 to 35.

Body slender. Temporals 2+2 or 2+3, rarely 1+2. Supralabials 9, the 3rd, 4th and 5th touching the eye. Scales in 19 rows, all more or less strongly keeled, with bidentate tips. Ventrals 155-165. Subcaudals 84-101. Anals 2. Hemipenis extends upto the 8th caudal plate, forked near the tip.

*Distribution* : Tenasserim, Thailand, Cambodia and the Malayan region.

*Status* : Available in sufficient number in throughout its range.

Genus 41. *Natrix Laurenti* 1768

1766. *Natrix Laurenti*, *Syn. Rept.*, : 73 (type *N. vulgaris* = *Coluber natrix* Linn).

1960. *Natrix*, Malnate, *Proc. Acad. Nat. Sci. Phila.*, 112 : 41-71.

Maxillary teeth 22-34, in continuous series, the teeth becoming longer posteriorly in the series. Mandibular teeth subequal. Hypapophyses developed throughout the vertebral column.

Body more or less elongate, cylindrical. Head distinct from the neck. Eye with round pupil. Nostrils dorsolateral. Internasals distinctly narrowed anteriorly, almost triangular in appearance. Loreal 1. Preocular 1. Postoculars 3 (rarely 2 or 4). Anterior temporals 2. Scales in 17 or 19 rows, smooth or keeled. Ventrals rounded. Subcaudals paired. Anal divided.

The genus *Fowlea* Theobald was revived by Malnate in 1960 to accommodate three species—*piscator*, *punctulata* and *vittata*, belonging to the genus *Natrix* of the previous authors. Later, however, in 1965, Malnate and Minton transferred the foregoing three species to *Xenochrophis* and suppressed *Fowlea* as a separate genus.

Malcolm A. Smith (1943, p. 281-309) described 25 species under the genus *Natrix*, out of which four (*sauteri*, *atemporalis*, *angeli* and *callichroma*) do not occur in the Indian subcontinent and one (*trianguligera*) is "a Malayan species that extends its range into the Indo-Chinese region, as far north as Mergui"

*Distribution* : Widely distributed throughout the south-eastern and southern Asia from Baluchistan in the west to Taiwan and southern China in the north-east and Malaysia, Java, Borneo and the Celebes in the south-east.

#### 196. *Natrix bellula* (Stoliczka 1871)

1871. *Tropidonotus bellulus* Stoliczka, *J.A.S. Bengal*, xi, pt. 2, : 432, pl. xxvi, fig. 2 (Prome, near Pegu; type lost).

1943. *Natrix bellula*, Smith, *Fauna Brit. Ind. Rept.*, 3 : 298.

The maximum length of this snake reaches upto 500 mm, tail 145 mm in males. Dorsum is dark olive-green with indistinct black spots quincuncially arranged and a dorsolateral series of light spots or short cross-bars; lips are white, the scutes edged with black, the white extending as a vertical bar in front of and behind the eye; sides of the neck and fore parts of body with white vertical bars; ventrals are white, the shields heavily edged with black. Maxillary teeth 32-34, gradually enlarged posteriorly; nostrils are slightly directed upwards; internasals truncate anteriorly, as long as the prefrontals; preocular 1; temporals 1+2; supralabials 9, third, fourth and fifth touch the eye. Body is stout; scales in 19 rows, more or less strongly keeled, except the outer row, which may be smooth. Ventrals 139-144; subcaudals 78-83 (63 Stoliczka). Hemipenis extends upto the 8th caudal plate, not forked.

*Distribution* : Myanmar (Prome near Pegu, Rangoon, Minhla, Thayetmyo district).

*Status* : Very rare, type is lost, now the species is known by half-grown specimen obtained near Rangoon by Prof. F. J. Meggitt and a specimen procured by Wall (1926) from Minhla.

#### 197. *Natrix percarinata* (Boulenger 1899)

1899. *Tropidonotus percarinatus* Boulenger, *P.Z.S.*, : 163, pl. 17, fig. 2. (N.W. Fukien; London).

1943. *Natrix percarinata*, Smith, *Fauna Brit. Ind. Rept.*, 3 : 299.

1984. *Natrix percarinata*, Mahendra *Ann. Zool.*, 22 : 241.

The maximum length in males reaches upto 720 mm, tail 190 mm, in females 940 mm, tail 270 mm. Juveniles are olive-green above, the colour descending on the sides of the body as V-shaped bars, often continued round to form complete bands; lower parts and intervals between the bars on the sides of the body yellow. Adults are olivaceous or greyish above, uniform or with dark reticulations or with dark cross-bars enclosing above, uniform or with dark reticulations or with dark cross-bars enclosing lightish spots; laterally they just reach the ventrals and are edged in front and behind with

white; they may or may not bifurcate, whitish below, with or without indistinct dark cross-bars. Body is stout; maxillary teeth 30-34, gradually enlarged posteriorly, nostrils directed slightly upwards; internasals distinctly narrowed anteriorly, usually longer than the prefrontals; preocular 1; temporals 2+3, rarely 3+3; supralabials 9, fourth, fifth touch the eye, sixth excluded by the lowest postocular; scales in 19 rows, strongly keeled, the outer row smooth in few cases; ventrals 133-157; subcaudals 68-85. Hemipenis extends upto the 8th caudal plate, forked near the tip.

*Distribution* : Upper Myanmar (Gole Tutap and Suprabum in the Triangle; Tong-King; North Thailand (Doi Su-tep); Annam (Kontum); Hainan; Southern China; Taywan (Formosa).

*Habits and habitat* : Inhabits the water courses in forested hilly areas. Its food comprises frogs, tadpoles, fish and crustacea. From 4-12 eggs are laid in a single clutch.

*Status* : A common snake in throughout its range.

#### GREENISH-OLIVE NICOBAR KEELBACK

##### 198. *Natrix nicobarensis* (Sclater 1891)

1891. *Tropidonotus nicobaricus* and *nicobarensis* Sclater, *J.A.S. Bengal*, **9** : 231, 250 pl. 6 (Nicobars, Calcutta).

1943. *Natrix nicobarensis*, Smith, *Fanua Brit. Ind.*, **3** : 289.

The maximum length of this snake reaches upto 250 mm, tail 177 mm. Dorsal colour is greenish-olive with 3 light, black-edged stripes; the vertebral stripe extends the whole length of the body and tail and is prominently edged with black; the outer stripes on scale rows 2 and 3, do not extend beyond the body and are edged with small black dots; ventrum is whitish; lips are white; a dark temporal streak from behind; the parietals are with a pair of small white spots. Maxillary teeth are about 25 in number, gradually enlarged posteriorly; nostrils are lateral in position; internasals truncate anteriorly, preocular 1; postoculars 3; temporals 1+2; supralabials 7 or 8, third and fourth or fourth and fifth touch the eye; body scales are in 19 rows, all are strongly keeled, ventrals 160; subcaudals 120; anal is 1. Hemipenis is not known.

*Distribution* : India : Nicobar Islands (Camorta).

*Status* : Very rare, known only from a juvenile type specimen.

#### Genus 42. *Fowlea* Theobald 1868

1868. *Fowlea* Theobald, *Cat. Rept. Asiat. Soc. Mus.*, : 57 (type *punctulata*).

1960. *Fowlea*, Malnate, *Proc. Acad. nat. Sci. Philadelphia*, : 41.

Maxillary teeth 26-30, gradually enlarging posteriorly; nostrils directed slightly upwards; internasals extremely narrow at anterior end, as long as the prefrontals;

frontal shield constricted in the middle; two times longer than its width; preocular is 1; temporals 2+3. Only one species comes under the scope of this work.

199. *Fowlea punctulata* (Gunther 1858)

1858. *Tropidonotus punctulatus* Gunther, *Cat. Col. Sn. Brit. Mus.*, : 247 (type locality unknown; London).

1960. *Fowlea punctulata*, Malnate, *Proc. Acad. Nat. Sci. Philadelphia*, : 41.

The body is moderately slender where as the maximum length of this snake reaches upto 540 mm; tail 145 mm. in males, while females are still larger 630 mm, tail 160 mm. Dorsum is brown or black, with small pale markings or dots; two outer rows of scales, ventrals and subcaudals yellowish, with dark margins; upper lip uniform yellowish; in most individuals remains a light, curved, longitudinal streak on each side of the nape. In addition to the characters given under genus, supralabials 9, fourth and fifth touch the eye, sixth excluded by the lowest postocular; body scales are in 17 smooth rows; ventrals 134-154; subcaudals 70-83. Hemipenis extends upto the 12th caudal plate, forked for about 1/3 of its length; the complete organ bear the spines, which are comparatively coarser at the distal end than at the proximal; extending for the major part of its length are two longitudinal folds; the organ is devoid of the basal spines.

*Distribution* : Myanmar (Tenasserim; Lower parts like Pegu, Watiya, Rangoon and Amherst).

*Habits and habitat* : The snake is extremely aquatic in habits and enters even in salt water.

*Status* : Common snake in its range.

Genus 43. *Balanophis* Smith 1938

1938. *Balanophis* Ghnther Smith, *P.Z.S.*, : 583 (type *Tropidonotus ceylonensis* Gunther).

1943. *Balanophis*, Smith, *Fanua Brit. Ind.*, 3 : 310.

This genus, instituted by Malcolm A. Smith in 1938 with *Tropidonotus ceylonensis* Gunther as the type, was included by him (1943, pp. 310-311) in his subfamily Colubrinae, which included also the Boiginae.

Deraniyagala (1955, pp. 58, 61) included it in the subfamily Natricinae. The disposition of its maxillary teeth, however, leaves no doubt that it belongs to the Colubrinae.

Maxillary teeth 24 to 26, followed by two enlarged, curved, grooved teeth; anterior mandibular teeth feebly enlarged. Head distinct from neck. Eye large, with round pupil. Scales in 19 rows at mid-body, all keeled. Vertebrae not enlarged, except the outer row. Two elongate parallel patches of naked skin extending for a head length

along the neck, separated from each other by 5 longitudinal rows of scales. Ventrals rounded. Hypapophyses developed throughout the vertebral column. A nuchal gland of the non-saccuited type present.

A single species.

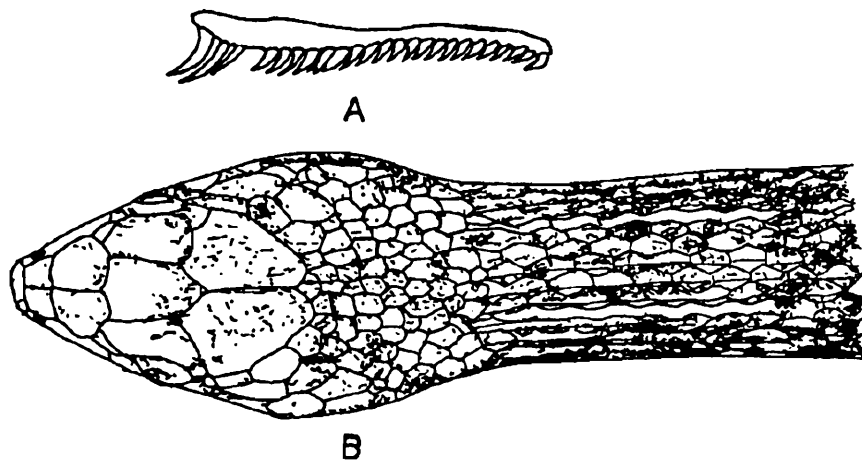
200. *Balanophis ceylonensis* (Gunther 1890)  
(Text fig. 116)

1858. *Tropidonotus chrysargus* var. *ceylonensis* Gunther, Cat. Col. Sn. Brit. Mus., : 71 (Ceylon : London).

1943. *Balanophis ceylonensis*, Smith, *Fauna Brit. Ind.*, 3 : 310.

*Total length* : Male 500 mm, tail 110 mm; female 460 mm, tail 95 mm.

Dorsal colour is slaty blue with more or less distinct, reticulated, dark-brown cross-bars enclosing a dorsolateral series of yellow or orange spots—about 24 on each side of the body and about 10 on the tail. Below, pale pink to bluish grey, speckled with dark grey, a dark brown stripe from behind the eye on to the neck, connecting there the first three lateral spots. Interstitial skin scarlet, the colour showing conspicuous when the snake inflates its body.



**Fig. 116.** *Balanophis ceylonensis*. A. Maxilla, B. Dorsal pattern of head and neck showing the naked skin.

Nostril between two nasals. Internasals quadrangular, not subtriangular as in *Natrix*. Supralabials 8, the 4th and 5th touching the eye. Four infralabials touching the anterior sublinguals; the latter shorter than the posterior sublinguals. Ventrals 131-141. Subcaudals 40-54. Anals 2.

Deraniyagala (1955, p. 61) states that in the newly hatched snakes (about 127 mm.) the lateral spots are white, but after three days they become yellow or light orange. The head brick or coral pink with a pale crimson lateral patch on the nape, the general color being violet gray.

As growth proceeds, the coloration apparently undergoes much changes (Deraniyagala 1955, p. 61). "Head bright orange, eye in a black lateral band which joins its fellow of the opposite side at the nape. Body slaty blue with a row of 24 lateral orange spots that are less red than the head. These spots are surrounded by black bands which unite with those of the opposite side. Ventrally the anterior half is pale reddish dusted with dark grey. The posterior half is bluey grey strongly dusted with dark grey."

*Habits and habitat* : "Rather slow moving; rearing the anterior part of the body and exposing a bright red patch of skin upon the neck and also revealing the scarlet interstitial skin between the body scales when excited, oviparous. A clutch of seven eggs adhering to each other uniserially were found by Dr. J.W.S. Pringle on March 6, 1953 within a decayed log at Deniyaya (S.P.). The eggs were bluntended and 19 mm. to 22 mm. in length and 9.5 mm. to 13.2 mm. in thickness. They hatched out on March, 27, 1953, the young being 127 mm. total length of which the tail was 25 mm. Ecdysis occurred on April 3, 1953." "The hatchlings feed upon grasshoppers" (Deraniyagala, 1955, p. 62).

Malcolm Smith (1943, p. 15) describes the nuchal gland of *B. ceylonensis* as follows : On stretching the skin of the neck, "two elongated, naked areas can be found. The gland is a continuous place of tissue 10 to 20 mm. in length and lies immediately beneath the naked skin. The gland is attached to the skin and comes away with it when that is stripped from the body. It has neither lumen nor duct. Its secretion is discharged by rupture of the skin covering it. It is an irritant to mucous membranes."

*Distribution* : Ceylon : a hill species, frequenting decayed vegetation in the rain forests.

*Status* : Quite common.

#### Genus 44. *Pseudoxenodon* Boulenger 1890

1890. *Pseudoxenodon* Boulenger, *F. B. I.*, 340 (type *macrops*).

1943. *Pseudoxenodon* Smith, *Fauna Brit. Ind.*, 3 : 311.

Maxillary teeth 19 to 28, increasing in size posteriorly, the last two abruptly and much enlarged, and separated from the others by a slight interval. Hemipenis deeply forked.

Scales keeled; without apical pits; in 17 or 19 rows at mid-body and 15 rows before the vent; disposed obliquely on the anterior part of the body. Ventrals rounded. Tail moderate; subcaudals paired. Anal divided.

Only one species in the Indian subcontinent.

## FALSE COBRA

201. *Pseudoxenodon macrops* (Blyth 1854)

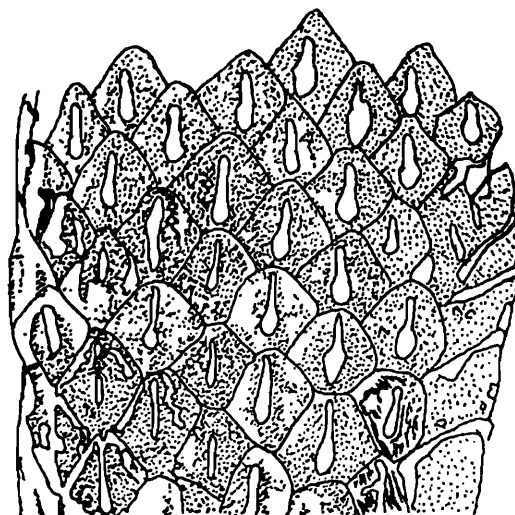
(Text fig. 101 C &amp; 117)

1854. *Tropidonotus macrops* Blyth, *J.A.S. Bengal*, 23 : 296 (Darjeeling, Calcutta).1943. *Pseudoxenodon macrops*, Smith, *Fauna Brit. Ind.*, 3 : 311-312.

The maximum length 1160 mm, tail 230 mm in males and 1020 mm, tail 200 mm, in females. Color according to Wall (1909), "the ornamentation of this species is very varied and in some specimens extremely beautiful. In a young example the head was slaty-blue, behind this the nape bore a broad intensely black arrow-head, bordered behind with a narrow band of cinnamon. In some specimens the head is rich dark green; in some the arrow-head is billiard-cloth green, in others lilac and in others is completely absent. In some the black is nearly uniformly olivaceous-green or brown. In some the series of dark costal spots is but obscure, in others very black or purplish. In some no trace of light cross-bars can be seen, in others they are more or less distinctly visible, in others very conspicuous, sometimes whitish, sometimes cinnamon or the anterior whitish and the posterior cinnamon. Some specimens are checkered with green, black, amber and ochre spots. With all this variety of form the specimens do not lend themselves to a grouping into colour varieties, for scarcely two specimens are quite alike." Nostril large, between two nasals. Loreal large. Preocular 1, not touching the frontal. Postoculars 3. Temporals 2+2. Supralabials 8, the 4th and 5th touching the eye. Scales in 19 : 19 or 17 : 15 rows. Ventrals 151-180. Subcaudals 55-80. In the sexually mature male the keels on the ischiadic region develop strong tubercles.

*Distribution* : India, Eastern Himalays as far west as Nepal; Assam.

*Elsewhere* : Myanmar (as far north as lat. 28° and south to Taok plateau in Tenasserim); Thailand (Pa Meang in the extreme north); Annam (Langbian plateau); Malaya Peninsula (Cameron Highlands).



**Fig. 117.** *Pseudoxenodon macrops*. Ischiadic region of male, showing the knobbed keels.

*Habits and habitat* : Inhabits hilly areas upto 6000 feet altitude. When excited, it can flatten its neck to a remarkable degree.

*Status* : It is a common snake in Darjeeling district but rare in Indo-China south to lat. 20°

#### Genus 45. *Macropisthodon* Boulenger 1893

1893. *Macropisthodon* Boulenger, *Cat. Sn. Brit. Mus.*, 1 : 265 (type *flaviceps*).

1943. *Macropisthodon*, Smith, *Fauna Brit. Ind.*, 3 : 314.

This genus comprises the snakes with robust body with a head distinct from the neck; eyes are moderately large, with round pupil; tail is quite short; maxilla with 11-18 solid teeth followed by two large, ungrooved pointed fangs directed almost in a backward direction and separated from the other teeth by short diastema; scales round the body are from 19-27 rows, strongly keeled and are with apical pits; ventral shields are rounded; subcaudal shields are paired; all the vertebra are with well developed hypapophysis; all the snakes of this genus mimic cobra, as they flatten their neck and the anterior portion of body, they also elevate and erect the head like a cobra. The genus includes 4 species distributed in Malaysia, Southern China, Pakistan (Sind) and India.

#### GREEN KEELBACK SNAKE

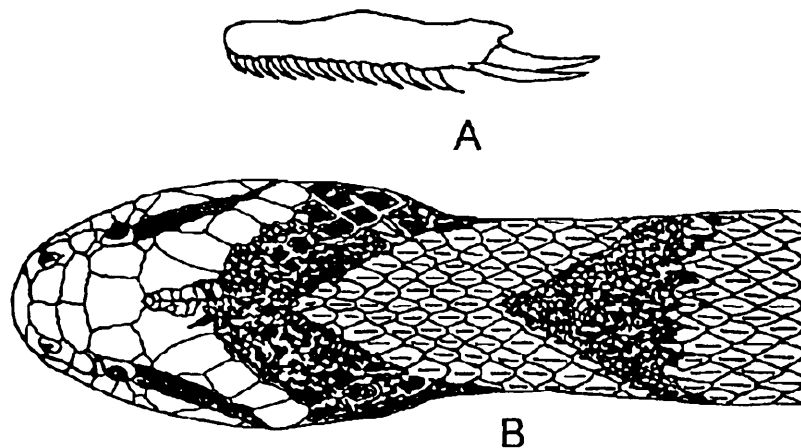
##### 202. *Macropisthodon plumbicolor* (Cantor 1839)

(Text fig. 118)

1839. *Tropidonotus plumbicolor* Cantor, *Proc. Zool. Soc. London*, : 54 (type loc. Malwa, Saugar, Central India).

1943. *Macropisthodon plumbicolor*, Smith, *Fauna Brit. Ind.*, 3 : 314.

This stout bodied green keelback reaches to a length of 580 mm in males (the maximum recorded length is 750 mm by wall) and 775 mm. in female (940 mm by wall); head is distinct from the neck; eyes are moderately large with round pupil; tail is quite short; maxilla is with 10-14 teeth, last two are enlarged; supralabials are 7, 3rd to 5th or 3rd and 4th or rarely 4th and 5th touching the eye; loreal is one; one pre and 2 or 3 postocular scales are present; one subocular is available in most cases, in some individuals it is missing; temporals are 2+3 or 2+2; scales round the middle of body are from 21-27 rows, strongly keeled, outermost two rows are smooth and comparatively larger than other scales; scales at neck are 21 or 22 or 23 or 25 rows and above the vent are 17 or 18 or 19 rows; ventral shields are from 144-162; subcaudal shields are divided, males : 39-48, females : 34-47; anal shield is divided, in few individuals it is single; the scales in the neck region exhibit plenty of variations (scales may be enlarged, may be paired, there may be a vertebral series of very small scales; hemipenis reaches upto the 15th caudal plate, forked opposite the 9th plate, it is strongly plicate and bears spines all over, spines towards the tip of the hemipenis



**Fig. 118.** *Macropisthodon plumbicolor* (Cantor). A. Maxilla, B. Dorsal pattern of head and neck.

are comparatively smaller, the vertebral gland extends to the whole length of the body. Dorsal colouration is greenish with yellow tinge or olive green with faint irregular black cross lines; dorsal aspect of head is with two black inverted V-shaped marks; ventrum is whitish-gray or dark gray with black spots; juveniles are distinctly coloured but as the age increases the snake becomes grass-green in life or olive brown (plumbicolor) in alcohol, with the advancement of the age the black markings completely disappear.

*Distribution* : India : Gujarat (Kheda, Valsad, Vadodara, Bharuch and Dangs districts). The whole of India except the Ganga Valley and the extreme north-west.

*Elsewhere* : Sri Lanka.

*Habits and habitat* : This nocturnal snake is basically a hill species and has been reached upto an elevation of 2500 meters; it is available, but rare in plains and prefers to live under heap of stones, dry wooden logs, in low vegetation or in grass, occasionally it enters the houses; the snake is most gentle and timid in disposition and most inoffensive; on sensing the danger it erects the anterior portion of its body and flattens the neck like a cobra exhibiting the defensive mimicry. The main food of the snake are frogs and toads and breeding season starts in April and extends upto July or August, generally lays 4 or 5 eggs in a single clutch.

*Status* : Commonly available throughout its range.

#### Genus 46. *Atretium* Cope 1861

1861. *Atretium* Cope, *Pr. Acad. Nat. Sci. Philad.*, : 299 (type *schistosum*).

1943. *Atretium*, Smith, *Fauna Brit. Ind.*, 3 : 319.

Maxillary teeth 19 to 24, the posterior ones being larger. Body cylindrical. Head is scarcely distinct from the neck. Eye with round pupil. Nostril valvular, slit-like,

directed rather upwards, in a completely or incompletely divided nasal. A single internasal. Scales keeled, without apical pits, in 19 rows at mid-body. Ventrals rounded. Subcaudals paired. Anals 2.

There are two species, one of which (*Atretium schistosum*) is found in Ceylon and India (Anaimalais, Wynaad, Mysore, U.P., Orissa) and the other (*Atretium yunnanensis* Anderson) in Western Yunnan. The former has 2 and the latter 3 or 4 prefrontals.

### OLIVACEOUS KEELBACK

#### 203. *Atretium schistosum* (Daudin 1803)

(Text fig. 119)

1803. *Coluber schistosus* Daudin, *Hist. Nat. Rept.*, vii, : 132 (based on Russell, 1801, *Ind. Serp.*, ii, : 5, pl. iv; no locality mentioned).

1943. *Atretium schistosum*, Smith, *Fauna Brit. Ind.*, 3 : 319-320.

Total length is 845 mm, tail 163 mm (generally 550 mm tail 160 mm, in males and 800 mm, tail 185 mm, in females). Dorsal color is olive brown or slaty gray uniform or with two series of small black spots along the back; a more or less distinct dark lateral streak sometimes present; upper lip, outer row of scales and lower surfaces yellow. A narrow reddish line down the body on scale rows 4 and 5 or 5 and 6 often present (Wall, 1921, p. 136; Deraniyagala, 1955, p. 64). Loreal subquadrangular. Preocular 1. Postoculars 2 or 3. Temporals 2+1, 2+2 or 2+3. Supralabials 8 or 9, two touching the eye. Scales in 19 : 19 : 17 rows, more or less distinctly keeled, the keels strongest on the posterior part of the body and the tail. Ventrals 128-161. Subcaudals

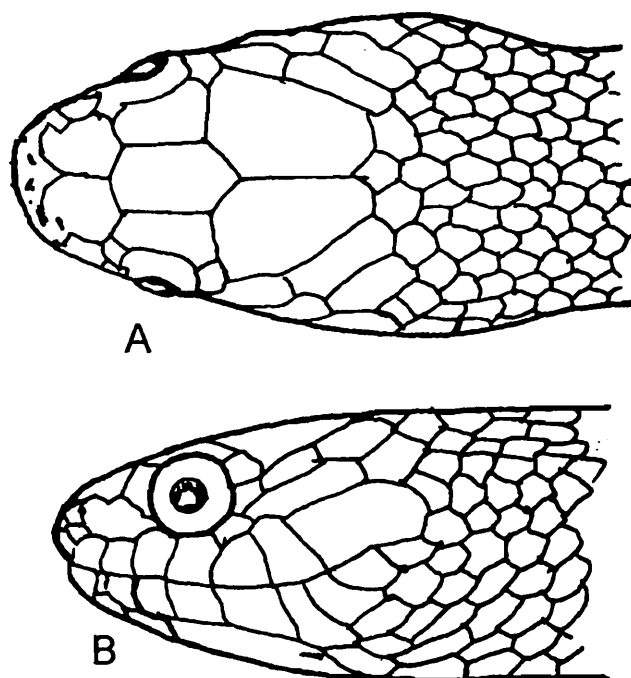


Fig. 119. *Atretium schistosum* (Daudin). Head : A. Dorsal view, B. Lateral view.

53-85. Hemipenis is forked at the junction of the distal 1/3 and proximal 2/3, complete organ is spinose and calyculate; the calyces are thick-walled and look like a honeycomb; the spines are small and present on the floor of the calyces.

*Habits and habitat* : Common among vegetation near freshwater and has been found in proximity to saline pools and lagoons in the Jaffna Peninsula. It is reported at times to ascend bushes. It feeds mainly on fish and frogs. When disturbed it erects its fore-body well off the ground and flattens its neck (Sliva, 1980, p. 344). Oviparous; lays 12 to 30 eggs at a time.

*Distribution* : As given under genus.

*Status* : A common snake.

#### Genus 47. *Trachischium* Gunther 1858

1858. *Trachischium* Gunther, *Cat. Col. Sn. Brit. Mus.*, : 30 (type *rugosum*).

1943. *Trachischium*, Smith, *Fauna Brit. Ind.*, 3 : 321.

Maxillary teeth 18 to 20, subequal. Body small, cylindrical. Tail short. Head is not distinct from the neck. Eye small, with vertically subelliptic pupil. Nostril between two very small nasals. Loreal present. Scales smooth, without apical pits, in 13 or 15 rows throughout. Ventrals rounded. Subcaudals paired. Anal divided. The snakes of this genus live generally under stones or fallen trees and feed upon worms. They lay 3 to 6 eggs at a time.

#### Key to the species of Genus *Trachischium*

Scales in 13 rows, those of the ischiadic region keeled in the males

Prefrontal single, rarely divided; 1 postocular; 6 supralabials ..... *I. fuscum*

Two prefrontals; 2 postoculars; 6 supralabials ..... *I. tenuiceps*

Two prefrontals; 1 postocular; 5 supralabials ..... *I. laeve*

Scales in 15 rows, all smooth; 2 prefrontals; 6 supralabials ..... *I. monticola*

#### ASSAM HILL WORM SNAKE

#### 204. *Trachischium monticola* (Cantor 1839)

1839. *Calamaria monticola* Cantor, *P.Z.S.*, : 50 (Naga Hills, Calcutta).

1943. *Trachischium monticola*, Smith, *Fauna Brit. Ind.*, 3 : 322.

The maximum length reaches upto 225 mm, tail 25 mm. The dorsal colouration is light or dark brown with blackish longitudinal lines and two more or less distinct reddish or light dorsolateral stripes. Yellowish below. A yellow spot on either side of the neck present or absent. Prefrontals 2. Loreal 1. Preocular 1. Postoculars 2, rarely

united. Temporals 1+1. Supralabials 6, the 3rd and 4th touching the eye. Scales in 15 rows, those of the sacral region quite smooth. Ventrals 113-125. Subcaudals 25-44.

*Distribution* : India : Assam (Hills north and south of the Brahmaputra); Bengal (Barakar).

*Status* : A common snake in hilly areas of Assam.

#### DARJEELING ORIENTAL WORM SNAKE

205. *Trachischium fuscum* (Blyth 1854)

(Text. fig. 120)

1854. *Calamaria fusca* Blyth, *J.A.S. Bengal*, 23 : 288 (Darjeeling, Calcutta).

1943. *Trachischium fuscum*, Smith, *Fauna Brit. Ind.*, 3 : 322.

Total length reaches upto 700 mm according to wall (Generally males 325 mm, tail 53 mm and females 480 mm, tail 65 mm). Dark brown or reddish brown above, more or less iridescent, with or without indistinct longitudinal streaks. Yellowish or brown (coral red in life) below, uniform or scantily mottled with brown. Prefrontal single, rarely divided. Loreal 1. Preocular 1. Postocular 1. Temporals 1+1 or 1+2. Supralabials 6, the 3rd and 4th touching the eye. Scales in 13 rows, strongly keeled on the posterior part of the body and the base of the tail in the male. Ventrals 132-165. Subcaudals 28-43.

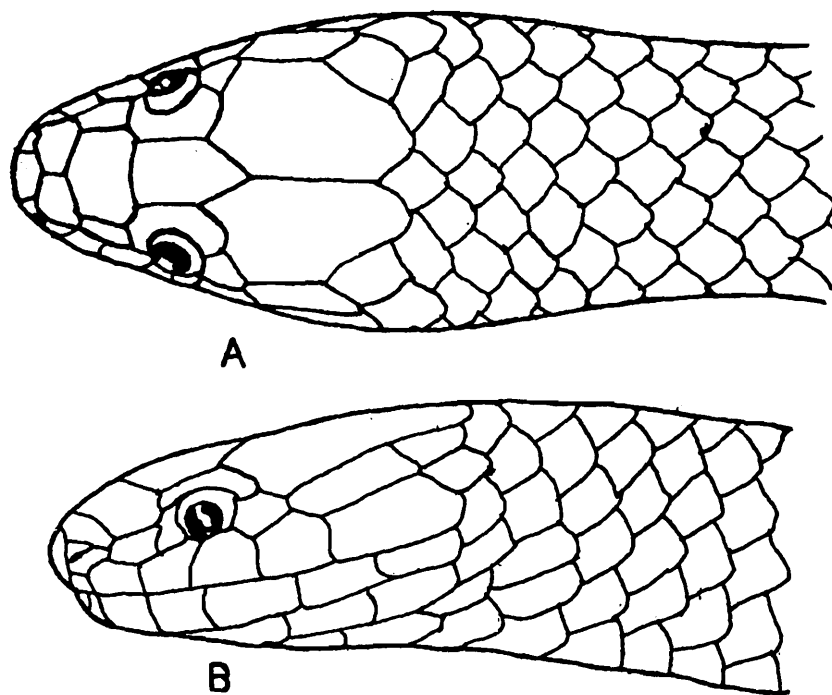


Fig. 120. *Trachischium fuscum* (Blyth). Head : A. Dorsal view, B. Lateral view.

*Distribution* : India : Western Himalayas (from Gilgit, Pakistan, Loharganj, Garwhal district in Uttar Pradesh), West Bengal (Darjeeling district); Assam; Sikkim and Eastern Himalaya.

*Elsewhere* : Nepal.

*Status* : Very common (according to Wall) in the neighbourhood of Darjeeling at between 5000-7000 feet.

#### GUNTHER'S ORIENTAL WORM SNAKE

##### 206. *Trachischium guentheri* (Boulenger 1890)

1890. *Trachischium guentheri* Boulenger, *F.B.I.*, : 285 (Darjeeling, London).

1943. *Trachischium guentheri*, Smith, *Fauna Brit. Ind.*, 3 : 323.

The maximum length of this snake reaches upto 308 mm, tail 46 mm in males and 420 mm, tail 58 mm in females. The dorsal colouration is dark brown or reddish brown, uniform or with faint lighter and darker longitudinal streaks; yellowish or coral red on the lower side, uniform or scantily mottled with brown. Juveniles are with an indistinct yellowish collar. Head scales are like *T. fuscum*; scales in 13 rows, strongly keeled in males on either side of the vent; ventrals 131-154; subcaudals 30-43.

*Distribution* : India : Sikkim, West Bengal (Darjeeling district).

*Status* : A common snake in the neighbourhood of Darjeeling at between 3000-7000 feet.

#### BENGAL WORM SNAKE

##### 207. *Trachischium tenuiceps* (Blyth 1854)

1854. *Calamaria tenuiceps* Blyth, *J. A. S. Bengal*, 23 : 288 (Darjeeling, Calcutta).

1943. *Trachischium tenuiceps*, Smith, *Fauna Brit. Ind.*, 3 : 323.

Total length is 370 mm, tail 50 mm in female. Dark brown to blackish above; yellow below (bright yellow or orange in life). Tail mottled below with brown and with a brown mesial line. Young light brown above, the scales with dark edges forming longitudinal lines. Prefrontals 2. Loreal 1. Preocular 1. Postoculars 2. Temporals 1+1 or 1+2. Supralabials 6, the 3rd and 4th touching the eye. Scales in 13 rows, keeled on the sides of the vent in the male. Ventrals 125-140. Subcaudals 28-42.

*Distribution* : India : Sikkim, West Bengal (Darjeeling district, hills near Barakar).

*Elsewhere* : Nepal.

*Status* : Available in throughout its range.

WEST HIMALAYAN WORM SNAKE  
208. *Trachischium laeve* Peracca 1904

1904. *Trachischium laeve* Peracca, *Rev. Suissc. Zool.* Geneva, **12** : 665 ("Indes orientales"; Geneva).

1943. *Trachischium laeve*, Smith, *Fauna Brit. Ind.*, **3** : 324.

The maximum length of male reaches upto 305 mm, tail 50 mm and females 450 mm, tail 60 mm. The dorsal colouration is olive above; yellowish below. Posterior half of the belly and the tail uniform or mottled with gray. Prefrontals 2. Loreal 1. Preocular 1. Postocular 1. Temporals 1+2. Supralabials 5, the last very long. Scales in 13 rows, strongly keeled on either side of the vent in the male. Ventrals 141-147. Subcaudals 26-39.

*Distribution* : India : Western Himalayas (Muktesar and near Naini Tal).

*Status* : A rare snake, known from a few examples.

Genus 48. *Plagiopholis* Boulenger 1893

1893. *Plagiopholis* Boulenger, *Cat. Sn. Brit. Mus.* **I**, : 301 (type *blakewayi*).

1943. *Plagiopholis*, Smith, *Fauna Brit. Ind.*, **3** : 324.

Maxila short, with 16-20 small, equal teeth.

Body short, stoutish, cylindrical. Tail short. Head not distinct from the neck. Nostril between two nasals. Eye with vertically subelliptic pupil. Loreal absent.

Preocular 1. Postoculars 2. Anterior temporal 1. Supralabials 5 or 6. Scales smooth, without apical pits, disposed obliquely, in 15 rows throughout. Ventrals rounded. Subcaudals paired or some of them single. Anal 1.

Two species, one of which occurs in Burma and the other in Upper Laos and Tong-King.

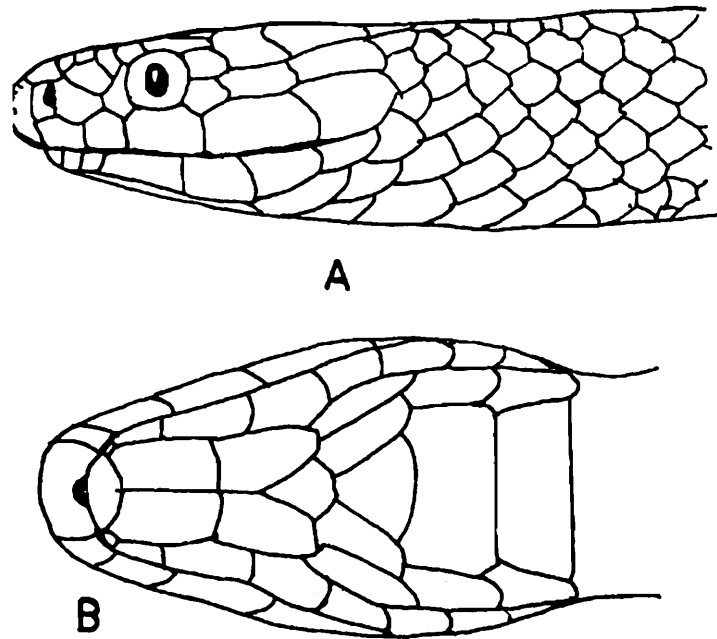
**Key to the species of Genus *Plagiopholis***

- I. Loreal scale is not present. Scales slightly oblique; supralabials are 5, the third touch the eye, Temporals 1+1.....*Plagiopholis blakewayi*
- II. Loreal scale is present. Scales absolutely oblique; supralabials are 6, the third and fourth touch the eye; Temporals 1+2. .... *plagiopholis nuchalts*

209. *Plagiopholis blakewayi* (Boulenger 1893)  
(Text fig. 121)

1893. *Plagiopholis blakewayi* Boulenger, *Cat. Sn. Brit. Mus.*, : 301, pl. 19 (Toungyi, Shan States : London).

1943. *Plagiopholis blakewayi*, Smith, *Fauna Brit. Ind.*, **3** : 325.



**Fig. 121.** *Plagiopholis blakewayi* (Boulenger). A. Lateral view of head, B. Ventral view of head.

*Total length* : 380 mm, tail 37 mm.

Dorsal colour is dark brownish or reddish with small black spots; yellowish (or pink in life) below, uniform or speckled with brown. A black chevron on the neck present or absent. Lips yellowish, the scales edged with black.

Supralabials 5, the 3rd touching the eye. Ventrals 124-134. Subcaudals 20-31. The hemipenis is not forked but the sulcus bifurcates near the base of the organ, distal to the fork the organ is spinose, except at the tip, where it is calyculate.

*Distribution* : Burma (Kachin Hills; Southern Shan States).

*Habits and habitat* : Secretive snakes, oviparous; its main diet includes the worms.

*Status* : Available but not so common.

#### 210. *Plagiopholis nuchalis* (Boulenger 1893)

1893. *Trirhinopholis nuchalis* Boulenger, *Cat. Sn. Brit. Mus.* I, : 419, pl. xxxviii, fig. 1 (Toungyi, S. Shan States; London).

1943. *Plagiopholis nuchalis*, Smith, *Fauna Brit. Ind. Rept.*, 3 : 326.

The maximum length reaches to 450 mm, tail 55 mm in males. Dorsum is brownish-black or with a reddish tinge, many of the scales edged with black; a dorsolateral series of rounded black spots connected with one another by light brown cross-bars or a dorsal series of obliquely placed, light brown, black-edged cross-bars or elongated

spots; sometimes small white or yellowish spots forming a network; a broad black chevron on the neck, pointing forwards with or without a pale ending; belly is yellowish, more or less thickly speckled with black and usually with large squarish black spots on either side; in rare cases these black spots are missing. General characters are similar to *P. blakewayi* except that loreal is square-shaped; temporals 1+2; supralabials are 6, third and fourth touch the eye, the fifth one is largest; body scales are distinctly oblique, those of the sacral region are feebly keeled in males, ventrals 122-142; subcaudals 23-30, paired or some of the anterior shields are entire; anal is 1. Hemipenis is forked for about half of its length, but the bifurcation of the sulcus starts quite at back; the complete organ bears spines except near the bifurcation of the sulcus, where there are longitudinal folds, at the extreme tip of the organ the spines are very small, the spines gradually increase in size as they approach the proximal area.

*Distribution* : Myanmar (Mahtum and Dinghputyang, north of the triangle; Katha district Kachin Hills, Mogok, Shan states, Toungoo district; Karen Hills); Thailand north of lat. 13° (Chiengmai, Doi Ang-ka; Khun Tan; Sai Yoke district on the Myanmar-Thai border, north-west of Ratburi). In Myanmar these snakes have been recorded at between 3000-4000 feet altitude; in Thailand Smith's specimens were collected at 2000 feet.

*Status* : A common snake, in its complete range.

#### Genus 49. *Rhabdops* Boulenger 1893

1893. *Rhabdops* Boulenger, *Cat. Sn. Brit. Mus.*, 1 : 300 (type *olivanceus*).

1943. *Rhabdops*, Smith, *Fauna Brit. Ind.*, 3 : 327.

Maxilla rather short, but extending beyond the palatine, with 10 to 12 small subequal teeth. Mandibular teeth subequal. Body cylindrical, elongate. Head much depressed, not distinct from the neck. Eye with rounded or vertically subelliptic pupil. Nostril (Fig. 70) crescentic, valvular, in the nasal or connected by suture with the 1st supralabial. Rostral large, much broader than high, well visible from above. Anterior temporal one, long and narrow, loreal present. Supralabials 5, the 3rd touching the eye or separated from it by a subocular and the lower postocular, the 5th very long. Scales smooth, without apical pits, in 17 rows throughout. Ventrals rounded, subcaudals paired. Anals 2.

*Range* : Southern India, Burma and Yunnan.

#### Key to the species of Genus *Rhabdops*

- I. One internasal; one prefrontal..... *R. bicolor*
- II. Two internasals; two prefrontals ..... *R. olivaceus*

## OLIVACCUS SLUT-EATER

211. *Rhabdops olivaccus* (Beddome 1863)

1863. *Ablabes olivaceus* Beddome, *Madras Quart. J. Med. Sci.*, **6** : 2 (Manantoddy, Malabar district, London).

1943. *Rhabdops olivaccus*, Smith, *Fauna Brit. Ind.*, **3** : 328.

The maximum length of this snake reaches upto 780 mm, tail 120 mm, in females; nothing is known about males. The dorsal colouration is olivaceous or yellowish-brown; ventral aspect of the snake is also of the same colour pattern; with 2 dorsolateral and 2 lateral longitudinal series of small black spots are present; ventral shields are indistinctly edged with dark brown. Head is somewhat depressed; rostral shield is large, much broader than high and distinctly visible from above; suture between the internasals is shorter than that between the prefrontals; internasals 2; prefrontals; preocular 2; postocular 2; frontal shields is large, almost as broad as long, 3 to 4 times as broad as the supraoculars, longer than its distance from the end of the snout, shorter than the parientals; loreal is longer than high; temporals 1+1, long and narrow; supralabials 5, third touch the eye, fifth is very long; posterior genials shorter than the anterior, generally separated from one another by scales; ventrals 206-215; subcaudals 62-74; anals 2. Hemipenis is not forked, undivided; complete organ bears spines which are minute towards the distal side but become gradually larger towards the distal side but become gradually larger towards the proximal end; at the base of the penis spines are arranged in longitudinal series; parallel to the sulcus there are two prominent folds.

*Distribution* : India : Western Ghats (Wynaad, a highland area between the coorg and Nilgiri Hills).

*Status* : A rare snake.

## ASSAMESE BLACK SLUG-EATER

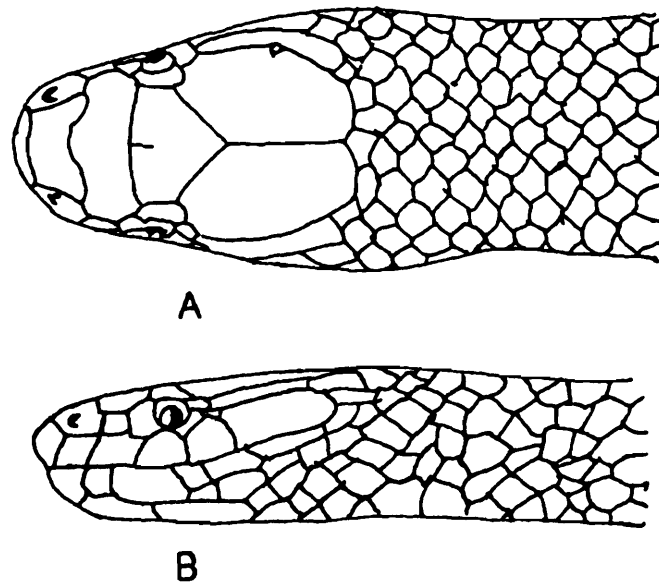
212. *Rhabdops bicolor* (Blyth 1854)

(Text fig. 122)

1854. *Calamaria bicolor* Blyth, *J.A.S. Bengal*, **23** : 289 (Assam).

1943. *Rhabdops bicolor*, Smith, *Fauna Brit. Ind.*, **3** : 328-329.

Total length is male 600 mm, tail 125 mm; female 675 mm, tail 145 mm. Snout broadly rounded nostril directed slightly upwards, internasals and prefrontals each united into a single shields temporals 1+1, long and narrow. Sometimes internasal united with prefrontals or prefrontals with frontal. "One example has an azygous shield between the prefrontals" (Malcolm A. Smith, 1943, p. 329). Frontal triangular, preoculars 1 or 3. Postoculars 2. Ventrals 187-214. Subcaudals 58-79; anals 2. Hemipenis is as in *R. olivaceus* but without longitudinal folds.



**Fig. 122.** *Rhabdops bicolor* (Blyth). Head : A. Dorsal view, B. Lateral view.

"Dorsal colouration is dark brown or black above and yellowish white below. The two colours strongly contrasted...tail uniform below or spotted with black. Immature specimens may have the dorsal scales edged with black, forming longitudinal lines; in specimen B. M. 1935. 10.12.10 from the Mishmi Hills, the dark colour of the back descends on the flanks in a series of V-shaped marks" (Malcolm A. Smith, 1943, p. 329).

*Habits and habitat* : Feeds on worms and slugs; inhabits hilly areas.

*Distribution* : India : Assam (Khasi and Mishmi Hill).

*Elsewhere* : Myanmar (Kachin Hills); Western Yunnan.

*Status* : Available, but not in abundance.

#### Genus 50. *Aspidura* Wagler 1830

1830. *Aspidura* Wagler, *Syst. Amphib.*, : 132, 191 (type *Scytale brachyorrhos* Boie).

1943. *Aspidura*, Smith, *Fauna Brit. Ind.*, 3 : 334.

Diminutive, inoffensive snakes found in Ceylon; living in loose soil, humus and mulch piles, leaf mold and rotten timber. They are oviparous, laying 2 to 12 eggs at a time and feed upon earthworms and insect larvae.

Maxillary teeth 20-24, subequal. Body cylindrical, gradually increasing diameter to 3/4 of its length and then diminishing, more sharply posterior to the vent. Head not distinct from the neck. Eye with round or vertically subelliptic pupil. Nostril between the paired nasal and the 1st supralabial. Internasal single. No loreal.

Temporals 1+2. Supralabials 6, the 4th touching the eye. Costal scales smooth, without apical pits, 15 or 17 rows throughout. Ventrals rounded. Tail short.

### Key to the species of genus *Aspidura*

- I. Preocular present.
  - A. All the subcaudals single.
    - 1. Scales in 15 rows ..... *A. trachyprocta*
    - 2. Scales in 17 rows.
      - a. Prefrontal not in contact with the eye; both postoculars in contact with the parietal; ventrals 134-159 ..... *A. brachyorrhos*
      - b. Prefrontal in contact with the eye; upper postocular along in contact with the parietal; ventrals 101-122. .... *A. guentheri*
  - B. Posterior subcaudals divided ..... *A. deraniyagalae*
- II. No preocular.
  - 1. Scales in 15 rows; ventrals 112-120 ..... *A. drummondhayi*
  - 2. Scales in 17 rows; ventrals 123-145 ..... *A. copei*

### 213. *Aspidura brachyorrhus* (Boie 1827)

1827. *Scytale brachyorrhus* Boie, Isis, : 517. (Type locality : "Java" = Ceylon).

1943. *Aspidura brachyorrhus*, Smith, *Fauna Brit. Ind.*, 3 : 336.

The maximum length reaches to 410 mm, tail 50 mm. Dorsal colour is reddish or yellowish brown with 4 more or less distinct darker longitudinal streaks and a vertebral series of blackish dots. Nape with an oblique blackish stripe on each side. Belly uniform yellowish. Tail more or less abundantly speckled with brown.

Eye bounded anteriorly by a preocular alone, the prefrontal being excluded by it. Prefrontal in contact with the 2nd and 3rd supralabials. Two postoculars, both in contact with the parietal. Anterior sublinguals 2 to 3 times the length of the posterior. Scales in 17 rows, those on either side of the vent feebly keeled in the male. Ventrals 134-159. Subcaudals 25-39, single. Anal 1. Hemipenis not known.

*Distribution* : Sri Lanka (Kandy).

*Habits and habitat* : Inhabits the hilly areas; oviparous, 2-5 eggs are laid in a single clutch.

*Status* : A common snake in the neighbourhood of Kandy.

214. *Aspidura copei* Gunther 1864

1864. *Aspidura copei* Gunther, *Rept. Brit. Ind.*, : 203, pl. xviii, fig. E (Ceylon : London).

1943. *Aspidura copei*, Smith, *Fauna Brit. Ind.*, 3 : 336.

*Total length* : "Snout-vent lengths range from 325 to 524, tail lengths from 33 to 78 and mid-body diameter ranges from 5.5 to 25 mm." (Gans and Fetcho, 1982, p. 298).

Dorsal colour is brown above with two longitudinal series of large, black, pale-edged spots. Nape with a broad, oblique, black stripe on each side. Lower surface yellowish, spotted or speckled with dark brown.

No preocular. Prefrontals alone bounding the eye anteriorly, in contact with the 2nd, 3rd and 4th supralabials. Postoculars 2, the lower longer than the upper, both in contact with the parietal. Scales in 17 rows, strongly keeled in the posterior part of the body and at the base of the tail in the male. Ventrals 123-145. Subcaudals 15-35, undivided.

*Distribution* : Sri Lanka (Uva and central provinces; Balangoda district).

*Habits and habitat* : Inhabits hilly areas upto 4000 feet in Belgonda district. Wall recorded a specimen containing 21 eggs, 7 in one ovary, 14 in the other.

*Status* : A common snake in most of the areas of its range.

215. *Aspidura trachyrocta* Cope 1860

(Text fig. 123)

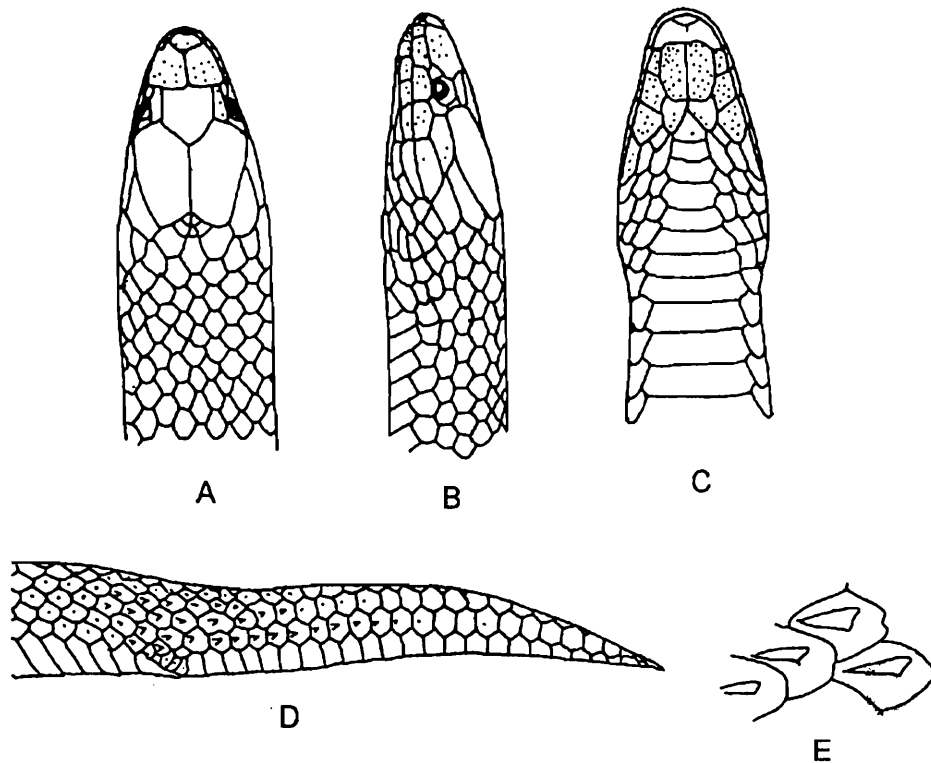
1860. *Aspidura trachyrocta* Cope, *Proc. Acad. Nat. Sci. Philad.*, : 75-76 (Ceylon).

1943. *Aspidura trachyrocta*, Smith, *Fauna Brit. Ind.*, 3 : 337.

*Total length* : Snout-vent 85-383 mm; tail 8-40 mm. (Gans and Fetcho, 1982, p. 304).

Dorsal colour is pale or dark brown or blackish with longitudinal series of small black spots and a dark streak along the side of the tail. A black lateral band passing from the snout through the eye to the neck. Belly bright canary yellow, orange or red and with small or large black dots or entirely black. Both the sexes are brilliantly coloured.

Eye bounded anteriorly by the prefrontal above and a preocular below. Prefrontal in contact with the 2nd and 3rd supralabials. Postoculars 2, the lower one larger and both of them in contact with the parietal. Anterior pair of sublinguals 2 to 3 times the length of the posterior pair. Scales in 15 rows, those on either side of the vent and at the base of the tail spinose in the adult male. Ventrals 125-151. Subcaudals single. male 21-26; female 12-18. Anal 1. Hemipenis is not known.



**Fig. 123.** *Aspidura trachyprocta*. A. Dorsal pattern of head and neck, B. Lateral pattern of head and neck, C. Ventral pattern of head and neck, D. Tail and ischiadic region, showing spinose tubercles of adult male. E. Four scales magnified.

**Distribution :** Sri Lanka (Central and Uvra Provinces). Laid low's record (1902) of this snake from male Atoll, Maldive Islands is considered by Gans and Fetebo (1982, p. 312) as an error.

**Habits and habitat :** A hill species inhabiting upto an altitude of 7000 feet (Wall). Breeding takes places throughout the year and 4-12 eggs are laid in a single clutch.

**Status :** Most common in many hill districts of Sri Lanka.

#### 216. *Aspidura drummondhayi* Boulenger 1904

1904. *Aspidura drummondhayi* Boulenger, Spol. Zeyl., ii, : 95, pl. (Balangoda dist., Ceylon : London).

1943. *Aspidura drummondhayi*, Smith, *Fauna Brit. Ind.*, 3 : 338.

**Total length :** 200 mm, tail 31 mm.

Dorsal colour is light brown to dark grey above and below, strongly iridescent, uniform or finely speckled with lighter.

No preocular. Prefrontal alone bounding the eye anteriorly, in contact with the 2nd, 3rd and 4th supralabials. Postoculars 2, the lower longer than the upper, both in contact with the parietal. Anterior sublinguals 1 to 2 times the length of the

posterior. Scales in 15 rows, those on either side of the vent keeled in the male. Ventrals 112-120. Subcaudals 17-26, all or only the posterior ones divided.

*Distribution* : Sri Lanka (Balangoda district).

*Status* : A rare snake.

### 217. *Aspidura guentheri* Ferguson 1876

1876. *Aspidura guentheri* Ferguson, *P.Z.S.*, : 819-820. (Coast of the W. Province, Ceylon : London).

1943. *Aspidura guentheri*, Smith, *Fauna Brit. Ind.*, **3** : 338.

The maximum length reaches upto 186 mm, tail is 26 mm, complete body is brown, the back with a vertebral and two lateral series of dark, light-edged spots. Head is with a yellow spot behind the eye and the nape with a yellow collar interrupted in the middle and bordered with blackish in front and behind.

Eye bounded anteriorly by the prefrontal above and a preocular below. Prefrontal in contact with the 2nd and 3rd supralabials. Postoculars 2, either subequal or the upper one longer than the lower. Only the upper postocular in contact with the parietal. Anterior sublinguals 2 to 3 times the length of the lower. Scales in 17 rows, those on either side of the vent feebly keeled in the male. Ventrals 101-122. Subcaudals 18-29, single. Anal 1. Hemipenis is now known.

*Distribution* : Sri Lanka (coast of the western Provinces; Balangoda district).

*Status* : A rare snake.

### 218. *Aspidura deraniyagalae* Gans and Fetcho 1982

1982. *Aspidura deraniyagalae* Gans and Fetcho, *Ann. Carnegie Mus.*, vol. **51** : 299-301.

1984. *Aspidura deraniyagalae*, Mahendra, *Ann. Zool.*, **22** : 222.

*Total length* : 255 mm; tail 29 mm.

Colour is light beige to darker brown dorsally and blackish brown, mottled on a lighter colour ventrally. Under surface of the tail generally darkened. None of pattern elements are sharply defined. Dorsal surface with a row of dark spots on each side of a narrow broken mid-dorsal stripe. Some lateral stripes also present. Head darkly pigmented. Ventral surface heavily pigmented along the mid-line.

Eye bounded anteriorly by the prefrontal above and a preocular below. Prefrontal in contact with the 2nd and 3rd supralabials. Postoculars 2, the lower one longer than the upper, both in contact with the parietal. Anterior sublinguals 1 to 2 times the length of the posterior. Scales in 17 rows. Ventrals 117-122. Subcaudals 13-26, the posterior ones divided.

*Distribution* : Sri Lanka (in the vicinity of Namunukula; about 1500 m. elevation).

*Status* : A rare species.

Genus 51. *Blythia* Theobald 1868

1868. *Blythia* Theobald, *Cat. Rept. Asiat. Soc. Mus.*, : 44 (type *reticulata*).

1943. *Blythia*, Smith, *Fauna Brit. Ind.*, 3 : 338.

Maxillary teeth 20 to 22, those in the middle slightly longer than the others. Body cylindrical. Head not distinct from the neck. Eye with rounded or vertically subelliptic pupil. Nostril between two small nasals or between them and the 1st Supralabial. Neither loreal, nor preocular. Rostral is as high as Groad, visible from above; internasals half or less than half, the length of the prefrontals, frontal shield is large, nearly two times border than the supraocular, much shorter than the parietals. Anterior temporal 1. Supralabials 6, rarely 5, the 3rd and 4th touching the eye, the 3rd in broad contact with the prefrontal, anterior sublingual at least twice as long as the posterior; the latter in contact with the 1st ventral. Scales smooth, in 13 rows throughout, without apical pits. Ventrals rounded. Tail short; subcaudals paired. Hemipenis is undivided and complete organ bears spines, which are placed on folds of skin which are longitudinally arranged, at the distal end of the penis and extending for about 1/3 of its length, are two longitudinal folds.

## BLYTH'S RETICULATED SNAKE

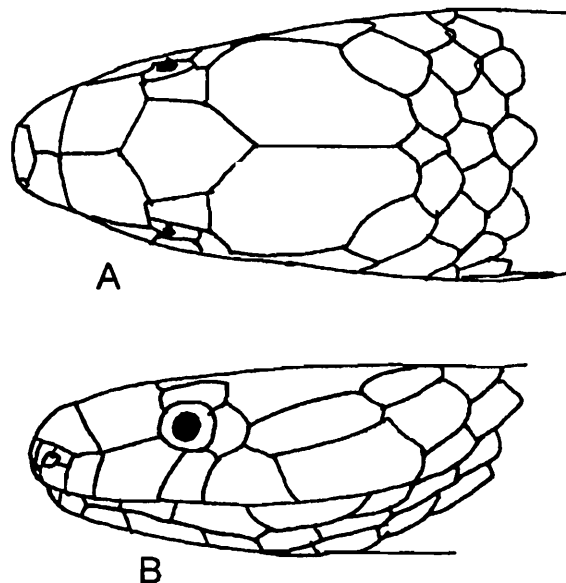
219. *Blythia reticulata* (Blyth 1854)

(Text fig. 124)

1854. *Calamaria reticulata* Blyth, *J.A.S. Bengal*, 23 : 287 (Assam; Calcutta).

1943. *Blythia reticulata*, Smith, *Fauna Brit. Ind.*, 3 : 339.

The maximum length of the snake is 315 mm, tail 40 mm, in males and 410 mm, tail 45 mm, in females. The dorsal colouration is olive to blackish, highly iridescent.



**Fig. 124.** *Blythia reticulata* (Blyth). Head : A. Dorsal view, B. Lateral view.

Juveniles are with a white collar interrupted on the vertebral line. This pattern fades out in adult individuals completely. Other characters are as given in the genus. Ventrals 122-157; subcaudals; male 26-32, female 16-24, anals 2.

*Distribution* : India : Assam (Hills north and south of the Brahmaputra to Manipur).

*Elsewhere* : Myanmar (Htingnan in the Triangle, Sima south of Myitkyiana, Chin and Lushai Hills).

*Habits and habitat* : A hill species, it is said to be oviparous.

*Status* : Available, but not in abundance.

### Genus 52. *Haplocercus* Gunther 1858

1858. Gunther, *Cat. Col. Sn. Brit. Mus.*, : 14 (type *ceylonensis*).

1943. *Haplocercus*, Smith, *Fauna Brit. Ind.*, 3 : 340.

Maxillary teeth 10 to 12, moderately large, the anterior ones slightly longer than the others.

Body cylindrical. Head not distinct from the neck. Anterior nasal forming part of the labial border, being fused with the first supralabial. Eye with round pupil. Rostral small, scarcely visible from above. A single internasal. No loreal. Preocular 1. Postoculars 2. Temporals 1+2. Supralabials 7, the 2nd and 3rd touching the prefrontal, the 4th touching the eye. Anterior sublinguals twice as long as the posterior, the posterior sublinguals in contact with the 1st ventral. Costal scales elongate, keeled, without apical pits, in 17 rows throughout. Subcaudals single.

A single species.

### 220. *Haplocercus ceylonensis* Gunther 1858

(Text fig. 125)

1858. *Haplocercus ceylonensis* Gunther, *Cat. Col. Sn. Brit. Mus.*, : 15.

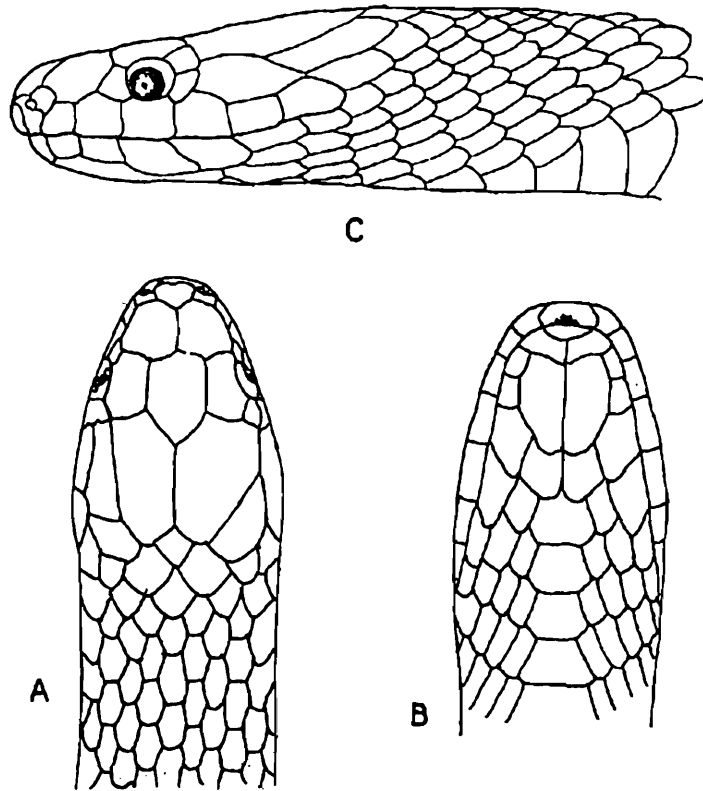
1943. *Haplocercus ceylonensis*, Smith, *Fauna Brit. Ind.*, 3 : 341.

*Total length* : Male 370 mm; tail 55 mm; female 440 mm; tail 60 mm.

Dorsal colour is brown with a black vertebral line, flanked by small black spots. An oblique, yellowish, black-edged bar on each side of the nape which may disappear in the adult. Lower surface uniform yellowish.

Characters as in the genus. Ventrals 174-217. Subcaudals 37-56. Anal 1.

*Habits and habitat* : Inhabits hilly areas between 3500-4200 feet altitude (Wall). Inoffensive; subterranean; feeds on earth worms; common in the silt of drains in tea estates; oviparous, laying 2-3 eggs at a time.



**Fig. 125.** *Haplocerus ceylonensis* Gunther--Head and neck : A. Dorsal view, B. Ventral view, C. Lateral view.

*Distribution* : Sri Lanka (Central, Uva and Sabaragamuwa Provinces).

*Status* : Quite common in the hills of Balangoda district.

### Genus 53. *Xylophis* Beddome 1878

1878. *Xylophis* Beddome, *P. Z. S.*, : 576 (type indicus).

1943. *Xylophis*, Smith, *Fanua Brit. Ind.*, 3 : 341.

Maxillary teeth small, 28 to 30, those in the middle a little larger than the others. Body cylindrical. Head not distinct from the neck. Eye with rounded or vertically subelloptic pupil. Loreal is elongate, almost touching the eye. No preocular, Postocular 1. Anterior temporal one, elongate, Supralabials 5, the 3rd and 4th touching the eye. Anterior sublingual very large, in contact with the mental, the first three infralabials being very small. Scales smooth, without apical pits, in 13 or 15 rows throughout. Ventrals rounded, Tail short; subcaudals paired. Anal 1.

Two species are known.

### Key to the species of the Genus *Xylophis*

- I. Supraocular larger than the postocular; scales in 13 rows .....*X. perroteti*
- II. Supraocular not larger than the postocular; scales in 15 rows .. *sternorhynchus*

221. *Xylophis perroteti* (Dum. & Bibr. 1854)  
(Text fig. 126)

1854. *Platypteryx perroteti* Dum. & Bibr. *Erp. Gen.*, 7 : 501 (Nilgiris; Paris).

1943. *Xylophis perroteti*, Smith, *Fauna Brit. Ind.*, 3 : 342.

The maximum length reaches up to 550 mm, tail 70 mm in males and 620 mm, tail 40 mm, in females. The dorsal colour is light or dark-brown, with small darker spots longitudinally arranged or united to form stripes. Certain individuals are with an ill-defined yellow collar. Lower parts are dirty yellowish, spotted with black or almost entirely black.

Internasal is very small; loreal more than twice as long as high; supraocular much larger than the postocular; supralabials 5, first very small, second long and narrow, third and fourth touch the eye, fifth largest; body scales in 13 rows; ventrals 139-147; subcaudals : Male 27-38; Female 16-20. Hemipenis forked for 3/4 its length, it is flouuded throughout, the folds on the distal part are oblique, gradually changing until at the fork they are transverse; proximal to the biguration there are smooth longitudinal folds; there are no spines.

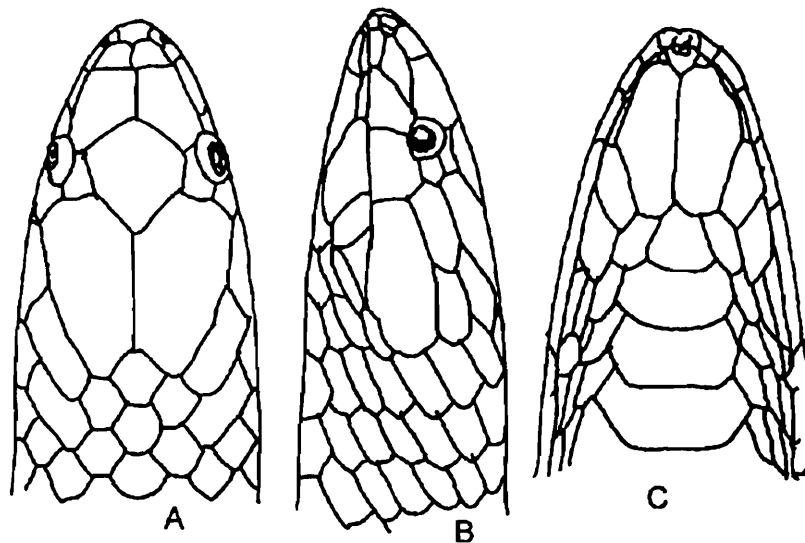


Fig. 126. *Xylophis perroteti* (Dumeril & Bibron). Head : A. Dorsal view, B. Lateral view, C. Ventral view.

*Distribution* : India : Western Ghats (Wynaad, a high-land between coorg and Nilgiris to Tinnevely).

*Status* : A rare species.

222. *Xylophis stenorhynchus* (Gunther 1875)

1875. *Geophis sternorhynchus* Gunther, *P.Z.S.*, : 230 (Travancore; London).

1943. *Xylophis stenorhynchus*, Smith, *Fauna Brit. Ind.*, 3 : 34-3.

The maximum length reaches upto 230 mm, tail 20 mm. The dorsal colouration is dark brown, uniform or with three rather indistinct darker longitudinal lines and a yellowish collar. Lower side is uniform dark brown. Snout sloping in profile; more pointed than *perroteti*; internasal variable in size, sometimes very small, sometimes very small, sometimes almost as long as the prefrontals; loreal longer than in *perroteti*; often extends anteriorly almost to the border of the mouth, reducing the second labial to a narrow stripe; supraoculars not or scarcely larger than the postocular; supralabials 5, first is minute, fifth is largest, third and fourth touch the eye; body scales in 15 rows; ventrals 108-132; subcaudals 14-31. Hemipenis is deeply forked as in *perroteti*; the proximal end has transverse flounces; distally these are united and form calyces.

*Distribution* : India, Western Ghats (Anaimalais to Tinnevely).

*Status* : Available, but not in abundance.

#### Genus 54. *Boiga Fitzinger* 1826

1826. *Boiga Fitzinger, New class. rept.*, : 29, 31, 60 (type *Coluber irregularis* Merem).

1943. *Boiga*, Smith, *Fanua Brit. Ind.*, 3 : 344.

1966. *Boiga*, Minton, *Bull. am. Mus. Nat. Hist.*, 134 : 138.

The genus *Boiga* includes nocturnal, terrestrial, arboreal, large headed snakes with laterally compressed body; eyes are large with vertical pupil and duplex retina; tail moderately long; frontal bone emerges on parasphenoid and in many species its trabecular ridges are absent; a retromaxillary process is present on the prefrontal bone, septomaxillaries are devoid of ascending process, which is quite an unusual condition met with in the Boigid snakes; maxillary teeth are subequal, 10-14, which are followed by 2 or 3 large grooved fangs; teeth are present on palatine which are strongly enlarged; ectopterygoid is forked anteriorly; posterior dorsal vertebrae of the back-bone are with hypapophyses; nostrils are situated between two nasals, the posterior nasal is concave; internasal are shorter than the prefrontals; frontal is as broad as, or almost as broad as long; rostral is small, squarish or pointed posteriorly; 2, rarely 3, postocular, supralabials are 8 in all the species, 4th, 5th and 6th touching the eye, anal shield is not divided; tubercles and pits are present on the head and trunk scales; body scales are smooth, obliquely arranged with apical pits and in 19-29 rows; ventral shields are rounded on obtusely angulate laterally; subcaudal shields are paired; hemipenis is divided, not forked, anal sac is abnormally long in females. The genus includes more than 25 species distributed in tropical Africa, southern Asia, tropical Australia and Papuaia. The species are available in India.

#### Key to the species of the Genus *Boiga*

- I. Preocular single, not reaching the upper surface of the head.
  - A. Back with a series of irregularly shaped spots.

- a. Vertebral scales feebly enlarged, their posterior margins rounded or obtusely pointed; posterior sublingual separated from each other by small scales ..... *B. trigonata*
  - b. Vertebral scales strongly enlarged, their posterior margins truncate or concave; posterior sublingual in contact with each other ..... *B. gokool*
  - B. Body with two alternating series of rounded or oval spots; two broad longitudinal stripes on the top of the head, diverging posteriorly, scales in 19 rows at mid-body ..... *B. multimaculata*
  - C. Body without rounded, oval or irregular spots, almost uniformly colored; scales in 19 or 21 rows at mid-body ..... *B. ochracea*
- II. Preocular 1-3, the upper one reaching the dorsal surface of the head.
- A. Nape with three longitudinal stripes, but head with no such stripes; frontals and parientals black, edged with white; scales in 19 rows .. *B. quincunciata*
  - B. Nape with two black longitudinal stripes; scales in 23, rarely 25 rows ..... *B. cynodon*
  - C. Nape with one longitudinal stripe; two such stripes on the top of the head; scales in 21 rows ..... *B. multifasciata*
  - D. Nape with a dark blotch or transverse bar, sometimes broken up; scales in 19 or 21 (23) rows ..... *B. ceylonensis*
  - E. Nape with or without three longitudinal stripes, the middle one extending forwards on the top of the head to the forntal shields; scales in 25-29 rows ..... *B. forsteni*
  - F. Nape without longitudinal stripes, transverse bars or blotches.
    - a. Preoculars 3 (rarely 2); grayish-brown above, with black and black edged spots scales in 19 rows ..... *B. barnesi*
    - b. Preocular 1; pale reddish-brown above, without dark markings; but with a series of salmon-red blotches along the back; scales in 23 rows ..... *B. dightani*
    - c. Preocular 1; color uniform green (brown in the juvenile); scales in 21 rows. .... *B. cyanea*

#### LARGE-SPOTTED CAT SNAKE

#### 223. *Boiga multimaculata* (Boie 1827)

1927. *Dipsas multimaculata* Boie, *Isis* : 549 (Java).

1943. *Boiga multimaculata*, Smith, *Fauna Brit. Ind.*, 3 : 347.

The maximum length in males reach upto 800 mm, tail 190 mm and 990 mm, tail 190 mm, in females. The dorsal maxillary teeth 9 or 10+2; anterior palatine teeth not strongly enlarged; temporals 2+2 or 2+3; posterior genials as long as or almost as long as the anterior, usually in contact with one another.

Preocular 1, rarely 2, not reaching the upper surface of the head, supralabials 8, the 3rd, 4th and 5th touching the eye. Scales in 19 : 19 : 15 or 13 rows; vertebrals strongly enlarged; ventrals 202-245; subcaudals 80-111; anal 1,. Hemipenis extend up to the 10th-12th caudal plate; distal half of the penis is calyculate, the cupsare thick-walled and feebly scalloped; on the ventral surface there are a number of coarse spines; the spines are fleshy, only the tip is exposed; there are about 16 in lateral series; the proximal half of the organ is devoid of spines. Color is Grayish brown, with two alternating series of large, rounded or oval darkish spots and in addition to them a series of much smaller spots on each side of the body. A pair of broad, dark, longitudinal stripes, diverging postseriorly on the upper surface of the head. A longitudinal stripe or elongated mark on the nape and another from the eye to the angle of the mouth, lower parts whitish, marbled or spotted.

*Distribution* : India : Assam.

*Elsewhere* : Thailand and the adjacent islands, Vietnam, Southern China, Hainan, Hong Kong, Java, Sumatra, Borneo and Myanmar (Burma).

*Status* : A Common snake in throughout its range.

#### TAWNY CAT SNAKE

#### 224. *Boiga ochracea* (Gunther 1868)

1868. *Dipsos ochraceus* Hunther, *Ann. Mag. Nat. Hist.*, (4)1 : 452 (Peys; London).

1943. *Boiga ochracea*, Smith, *Fanua Brit. Ind.*, 3 : 348.

The maximum length of this snake reaches upto 1050 mm, tail 235 mm, in males and 1100 mm, tail 215 mm, in females. The dorsal colouration is grayish, reddish or yellowish brown or coralred and form more or less distinct transverse lines or bars which are most prominent in juveniles; ventral aspect is paler, lips and chin are whitish. Some of the dorsal scales are black-edged, may or may not have a transverse arrangement, maxillary teeth are 10-12 + 12; anterior palatine teeth are not strongly enlarged; normally 1 preocular is present, not reaching the upper surface of the head; temporals 2+2 or 2+3; anterior genials about as long as the posterior, alter in contact with one another or separated by small seals; vertebral scales are strongly enlarged; supralabials 8, the 3rd, 4th and 5th touch the eye; ventrals 221-252; subcaudals 89-119; anal. 1. Hemipenis as in *Boiga multimaculata*.

*Distribution* : Two races have been described :

a. *B. ochracea ochracea* (Gunther), with scales in 21 : 21 : 15 or 17 rows, inhabiting Eastern Himalayas (Sikkim, Darjeeling district, Buxer Duars, and Assam (Goalpara, Sibsagar, Cachar); and

b. *B. ochracea walli* Malcolm Smith, 1943, with scales in 19 : 19 : 15 rows, inhabiting Myanmar south of lat. 25°, Tenasserim, and the Andaman and Nicobar islands.

*Status* : A common snake in throughout its range.

#### INDIAN GAMMA SNAKE

#### 225. *Boiga trigonata* (Schneider 1802)

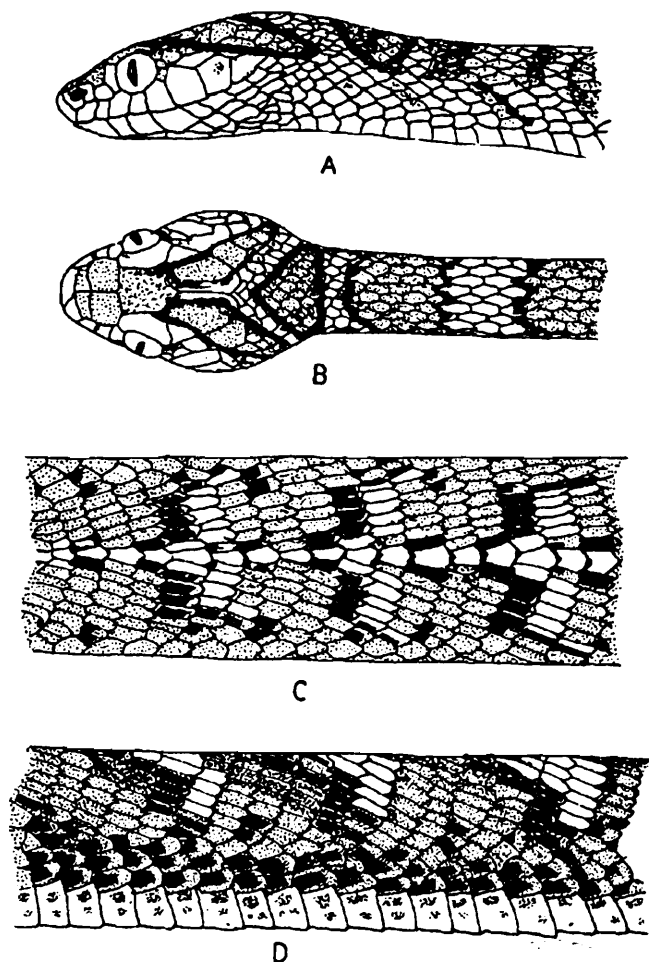
(Text figs. 127 & 128)

1802. *Coluber trigonatus* Schneider, *Bechst. Transl. Lincep.*, 4 : 256, pl. 40, fig. 1 (Vizagapatam).

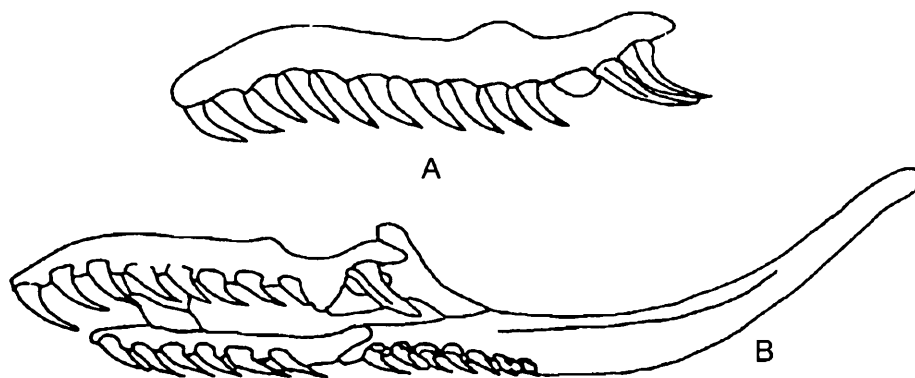
1943. *Boiga trigonata*, Smith, *Fauna Brit. Ind.*, 3 : 349.

1966. *Boiga trigonata*, Minton, *Bull. Am. Mus. Nat. Hist.*, 134 : 138-139.

This snake reaches to length of about as 1000 mm in males and 1200 mm in females; body is long and cylindrical with a distinct triangular head; maxillary teeth are 8-10, last one or two are enlarged fangs; anterior palatine teeth are moderately enlarged; preocular is one, not reaching upto the dorsal aspect of the head; temporals are 2+3; anterior and posterior genials are equal in length or the anterior ones are



**Fig. 127.** *Boiga trigonata* (Schneider). A. Lateral pattern of head and neck, B. Dorsal pattern of head and neck, C. Dorsal pattern of body, D. Lateral pattern of body.



**Fig. 128.** *Boiga trigonata*. A. Maxilla, B. Palato-maxillary arch.

slightly smaller, separated from one another by the small scales; body scales are in 21 : 21 : 15 rows, vertebral scales are slightly enlarged; ventral shields are 206-256; caudal shields are from 75-96; hemipenis reaches up to the 10th, 11th or 12th caudal shield; the distal half of the penis is calyculate, the cups bear thick, fleshy walls; on the ventral aspect of the hemipenis coarse, fleshy spines are present in 16 lateral series; the proximal half of the hemipenis is devoid of spines, thus exposing the tip distinctly. Dorsal colouration is grayish-brown, with two alternating series of large, rounded or oval, dark-brown, generally light-edged, spots, and two other series of much smaller spots on the sides of the body; in many individuals small vertebral spots are present; dorsal aspect of head is with two broad dark-brown or black longitudinal stripes, which diverge posteriorly, nape is with a longitudinal mark; a stripe emerges from the eye and reach up to the angle of mouth; ventrum is whitish, marbled or spotted with brown and most individuals are with a series of brown spots along each side of the belly.

*Distribution* : India : Gujarat : Vadodara, Panchmahals and Dangs districts; Peninsular India, Rajasthan, Western (Sabathu, Almora) and Eastern Himalayas (Sikkim, North Bengal).

*Elsewhere* : Sri Lanka (Uva Province), Pakistan (Baluchistan, North West, Frontier provinces); Eastern Iran; Saudi Arabia; Southern Uzbekistan (Trasscaspia).

*Habits & habitat* : This nocturnal, arboreal terrestrial species is found to be living in small to medium bushes, scrubby vegetation and also on tall trees with profuse branching; its food mainly comprises the lizards of genus *Calotes* of family Agamidae which is occasionally supplemented by small mammals, birds and their eggs and large insects. The prey is killed by constriction. The breeding season is from April to August, generally 6-12 eggs are laid in a single clutch, the incubation period is 46-52 days in captivity; at the time of birth, the hatching easier between 235-280 mm. in length. The snake is most pugnacious and hold and gives violent strokes to any intruder, the body inflates and deflates, if the snake is provoked or mishandled; the head and anterior portion of body is raised quite high from the ground and loops are

formed in the figure of 8, the head poised in the middle, the tail is briskly vibrated and the jaws open widely at the time of attack (which is repeated again and again).

*Status* : Common throughout its range.

**EASTERN GAMMA SNAKE**  
**226. *Boiga gokool* (Gray 1854)**

1854. *Dipsas gokool* Guray, III. Ind. Zool. ii, pl. 83, fig. 1 (Bengal : London).

1943. *Boiga gokool*, Smith, *Fauna Brit. Ind.*, 3 : 351.

The maximum length reaches up to 800 mm, tail 170 mm in males and 870 mm, tail 175 mm, in females. Characters as in *Boiga trigonata*, except that the vertebrals are strongly enlarged and the posterior sublingual are in contact with each other. Color and color pattern almost similar to *B. trigonata*. Preoculars 1 or 2, not reaching the upper surface of the head. Supralabials 8, the 3rd, 4th and 5th touching the eye. Scales in 21 (19) : 21 (19) : 17 (15) rows. Ventrals 219-232. Subcaudals 87-103. Anal 1.

*Distribution* : India, The Eastern Himalays as far west as Darjeeling; Assam as far south as lat. 24°N; Chittagong.

*Elsewhere* : Bangladesh (Chittagong).

*Habits and habitat* : In disposition and habits like *Boiga trigonata* (Wall, 1910).

*Status* : A common snake in most parts of its range, very common in the Duars.

**CEYLON CAT SNAKE**  
**227. *Boiga ceylonensis* (Gunther 1858)**

1858. *Dipsadomorphus ceylonensis* Gunther, *Cat. Col. Sn. Brit. Mus.*, : 176 (Ceylong; London).

1943. *Boiga ceylonensis*, Smith, *Fauna Brit. Ind.*, 3 : 351.

The maximum length of the snake reaches upto 1020 mm, tail 240 mm, in males and 1315 mm, tail 255 mm, in females. Maxillary teeth 12-20 +2; anterior palatine teeth not strongly enlarged; preocular 1, extending to the upper surface of the head, often touching the frontal; temporals 3 + 3 or 3 + 4; gentials most variable; the posterior genial usually in contact with one another, atleast anteriorly; supralabials 8 or 9, the 3rd, 4th and 5th touch the eye; body scales in 19, 21 or rarely 23 rows; vertebral scales are strongly enlarged ventrals 209-267, subcaudals 90-133; anal 1. Hemipenis is like *B. multimaculata*.

*Distribution* : India : Western Ghats; Orissa (Ganjam, Berhampur); Assam (Sibsagar); Northern cachar; Andaman Islands.

*Elsewhere* : Sri Lanka, Nepal (Chetlong).

Malcolm A. Smith (1943, p. 352) merges in this single species four species of Wall : *ceylonensis* (W. Ghats, Ceylon), *beddomei* (W. Ghats, Ceylon), *muchalis* (Ganjam

Dist., W. Ghats, Nepal, Assam), clined to give each of them subspecific rank. He also regards the northern specimens of muchalis as misidentified, being actually those of the Himalayan species *multifasciata* (Constable, 1949, pp. 143-144). Deraniyagala (1955, pp. 52-54), on the basis of average differences in numbers of teeth, ventrals and subcaudals, tries to differentiate the ceylonese form, *B. ceylonensis ceylonensis* (Gunther), from the South India one, *B. ceylonensis dakhunensis* Deraniyagala, 1955.

*Habits and habitat* : It is most agile, nocturnal, arboreal species inhabiting vegetation like bushes shrubs and high trees. It is a most pugnacious and vicious snake and attacks immediately and bites savagely; when agitated it rattles its tail. The main food comprises birds and their eggs, lizards of family Agamidae (Calotes), the prey is killed by constriction. It is oviparous, lays 3-10 elongate eggs in a single clutch (25.29 × 8.13 mm.), hatching measure 287-326 mm.

*Status* : Common in western Ghats and Sri Lanka; rare in other parts of its range.

WALL'S ASSAM CAT SNAKE  
228. *Boiga quincunciata* (Wall 1908)  
(Text fig. 129)

1908. *Dipsodomorphus quincunciata* Wall, *J. Bombay Nat. Hist. Soc.*, 18 : 272, pl. (Tinsukia; Assam).

1943. *Boiga quincunciata*, Smith, *Fanua Brit. Ind.*, 3 : 353.

The maximum length of the snake reaches upto 1550 mm, tail 365 mm, in males and 1260 mm, tail 310 mm, in females. The dorsal colouration is Yellowish or grayish brown above, with a vertebral series of dark spots separated by whitish areas. Nape with three longitudinal stripe. Frontal and parietal shields black, edged with white; a black stripe from the eye to the angle of the mouth. Maxillary teeth 11 or 12 + 23 anterior palatine teeth not strongly enlarged; loreal is some times unite with the prefrontal; preocular 1, reaching up to the upper surface of the head; temporals 2+3 or 3+3; posterior genials as large as or a little larger than the anterior, partly or completely separated by small scales; supralabials 8, the 3rd, 4th and 5th touch the eye; body scales in 19 : 19 : 15 or 13 rows; vertebral scales are fairly strongly enlarged; ventrals 237-253; subcaudals 118-125; anal 1 or 2. Hemipenis extends up to the 10th caudal plate; reaching from the tip of the organ nearly to the base are two prominent



Fig. 129. *Boiga quincunciata* (Wall). Dorsal pattern of body.

folds composed of large, fleshy, closely set, pointed papillae; between them and the sulcus are similarly shaped papillae arranged in longitudinal series, but less closely set; in general appearance they resemble the fleshy spinose papillae; the organ is completely devoid of spines; the extreme tip of the penis is calyculate.

*Distribution* : India : Assam (Tinsukia and Rangara, near Dibrugarh).

*Elsewhere* : Upper Myanmar (Hteingnan north east of Fort Hertz).

*Status* : A rare snake, known from 5 examples only.

### 229. *Boiga barnesi* (Gunther 1869)

1869. *Dipsas barnesi* Gunther, *P.Z.S.*, : 506, pl. 40, fig. 2 (Ceylon; Brit. Mus.).

1943. *Boiga barnesi*, Smith, *Fauna Brit. Ind.*, 3 : 354.

The maximum length in male reaches up to 550 mm, tail 130 mm. Dorsal colour is greyish brown above, with a mid-dorsal series of pale black-edged spots and a lateral series of smaller black spots on each side. Deraniyagala (1955, p. 52), who presumably had access to many fresh specimens describes the former spots as "edged with purplish brown" and the latter ones as "smaller purplish brown spots" Venter greyish white, dusted with dark specks. Head with a dark stripe extending from the eye to the angle of the mouth, bordered above by a light one. Labials with black sutures.

Preoculars 2 or 3, the upper one reaching the dorsal surface of the head. Supralabials 8, the 4th and 5th or the 4th-6th touching the eye. Scales in 19 : 19 : 15 rows. Ventrals 208-269. Subcaudals 98-120. Anal 1. Hemipenis extends up to 10th-12th caudal plate; the distal half of the organ is calyculate, the cups are with thick walls and feebly scalloped; on the ventral surface there are a number of coarse spines; the spines are fleshy, only the tip being exposed; there are about 16 spines in lateral series; the proximal half is spine less.

*Distribution* : An endemic hill species, found only in Ceylon (Gangaruwa).

*Status* : A rare snake, known from two specimens only.

### GREEN CAT SNAKE

#### 230. *Boiga cyanea* (Dum. & Bibr. 1854)

1854. *Triglyphodon cyaneum* Dum. & Bibr., *Erp. Gen.*, 7, 1079. (Type loc. unknown; Paris).

1943. *Boiga cyanea*, Smith, *Fauna Brit. Ind.*, 3 : 355.

The maximum length in males 1400 mm, tail 340 mm, and in females 1860 mm, tail 440 mm. Maxillary teeth 12 to 14+2; anterior palatine teeth not strongly enlarged; temporals 2+3. The color is green above; greenish white below, uniform or spotted with darker green. Interstitial skin black. Chin and throat blue in life. Preocular 1,

reaching the upper surface of the head. Supralabials 8, the 3rd, 4th and 5th touching the eye. Scales in 21 : 21 : 15 rows at mid-body. Vertebrae are strongly enlarged; ventrals 237-257, with feeble lateral keels subcaudals 124-138. Anal 1. Hemipenis extends up to the 12th caudal plate; the distal half of the penis is calyculate, the cups are very large with scalloped, spinose edges, proximal to this there is a small area having 6-8 longitudinal series of thick, fleshy spines; the remainder of the organ has smooth longitudinal folds.

*Distribution* : India : Darjeeling district, Assam.

*Elsewhere* : Burma, Thailand, Cambodia, Cochin China and Pulo Condore.

*Habits & habitat* : "Sluggish ...makes no attempts to escape when handled, but opens its mouth widely and remains on the defensive. With its green head, large golden-brown eyes, and the black inside to its mouth, it presents a strange sight. One that I kept, ate in succession 5 snakes" (Malcolm A. Smith, 1943, p. 356).

*Status* : Available in throughout its range but nowhere common.

#### HIMALAYAN CAT SNAKE

##### 231. *Boiga multifasciata* (Blyth 1861)

1861. *Dipsas multifasciata* Blyth, Jour. A. S. Bengal, **xxix**, : 114 (Subathum, Simla).

1943. *Boiga multifasciata*, Smith, *Fauna Brit. Ind.* **3** : 357.

*Total length*: Female 111.2 mm, tail 22.2 mm. Color is Grayish brown above, finely speckled with black, with narrow black bars, which may meet above on the vertebral line, forming A-shaped marks, in the apex of which is a more or less distinct white spot. Nape with a black longitudinal stripe, and the top of the head with two such lines. A black line from the eye to the angle of the mouth. Lower parts whitish, thickly spotted and speckled with black.

Maxillary teeth 10 or 11+2; anterior palatine teeth not strongly enlarged; temporals 1+2 or 2+3; posterior genials as long as anterior. Preoculars 1 or 2, the upper one reaching the dorsal surface of the head; supralabials 8, the 3rd, 4th and 5th touching the eye. Scales in 21 : 21 : 25 rows; ventrals 223-251; subcaudals 96-116; Anal 1. Hemipenis is not known.

*Distribution* : India : The Himalayas; Western Himalayas (Subathu, Mussooree, Naini Tal, Muktesan); Eastern Himalayas (Darjeeling district).

*Elsewhere* : Nepal Himalayas.

*Habits and habitat* : Inhabits the hilly areas above 5000 feet altitude; habits are like the other members of the genus.

*Status* : A rare species.

BIRD-EATING CAT SNAKE  
232. *Boiga cynodon* (Boie 1827)

1827. *Dipsas cynodon* Boie, *Isis* : 549 (Sumatra).

1943. *Boiga cynodon*, Smith, *Fauna Brit. Ind.*, 3 : 357.

*Total length* : Male 1440 mm, tail 330 mm, female 1680 mm, tail 370 mm. Colour is Brownish, grayish or pinkish above, with dark chevron-shaped spots, very distinct anteriorly. Ventrals with a series of dark-edged spots at their outer margins. Nape with a pair of black longitudinal parallel stripes. A black stripe from the eye to the angle of the mouth. Maxillary teeth 11 or 12 + 2; anterior palatine teeth strongly enlarged; temporals 2+3 or 3+3; posterior genials larger than the anterior, in contact with one another anteriorly, often separated by small scales. Preocular 1, reaching the upper surface of the head. Supralabials 8 to 10, the 3rd to 5th or 4th to 6th touching the eye, scales in 23, rarely 25 : 23 or 15 rows; ventrals 249-282, with obtuse lateral keels. Subcaudals 114-157. Anal 1. Hemipenis extends up to the 17th caudal plate; the distal half of the organ is calyculate, the cups are large, longer than broad, with scalloped but not spinose edges; the remainder of the organ has smooth longitudinal folds; the two areas are sharply defined from one another.

*Distribution* : India : Eastern Himalayas; West Bengal (Jalpaiguri); Assam & North-East (Garo Hills, Naga Hills, Samaguting, Cachar, Naharkatia).

*Elsewhere* : Myanmar (as far north as lat. 26°, Myittha); Thailand; Cambodia, Malaya Peninsula and Archipelago.

*Habits and habitat* : It is most sluggish and docile snake inhabiting plains with plenty of vegetation, foothills and hilly areas up to a low altitude. Its habits are strictly arboreal and it calmly units on the twinges and branches of trees to capture birds and their eggs, which comprise a major part of its food.

*Status* : A common snake in throughout its range.

233. *Boiga forsteni* Dum. & Bibr. 1854

1854. *Triglyphodon forsteni* Dum & Bibr., *Erp. Gen.* 7 : 1077.

1943. *Boiga forsteni* Smith, *Fauna Brit. Ind.*, 3 : 358.

This cat snake reaches to a larger length than *Boiga trigonata* i.e. upto 2150 mm. in males and 2312 mm. in females. In other characters it is quite similar to *Boiga trigonata* except that : maxillary teeth from 9-12, last one is a fang; anterior palatine teeth are strongly enlarged; preocular is one, reaching to the dorsal aspect of the head; temporals are small 3+3 or 3+4; supralabials 8-11, 3rd, 4th and 5th or 4th, 5th and 6th touching the eye, genial variable in size, the posterior pairs is generally separated from one another by small scales; body scales are in 25 or 29 : 17 rows, vertebral scales are feebly or in some individuals arrestingly enlarged, the degree of

enlargement of vertebrales varies even in the same individual, vertebral shields are from 254-272, with a distinctly prominent lateral keel; subcaudal shield are from 102-119, anal shield is not divided; hemipenis extends up to the 12th caudal shield, the distal half of the penis is calyculate; the cups are large, longer than broad, with scalloped but not spinose edges; the remainder of the hemipenis has crenate longitudinal folds, the two zones of the penis are clearly demarcated and distinct from one another. Dorsal colouration is uniformly brown or reddish-brown or with regular, angular black spots or cross bars, with white spots between them; this type of colour pattern is comparatively more distinct on the anterior part of the body and posteriorly may be replaced by a chequered patterns; a black stripe is present on head, which emerges from the frontal shield and reaches up to nape, and two more such stripes are present on the nape just parallel to it; a broad black stripe emerges from the eye and reaches to the angle of the mouth; in many individuals which possess the dark markings on the body, the labials are marked with distinct black spots on sutures; ventrum is whitish in those snakes, which possess a uniform dorsal colouration, otherwise in most of the other individuals it is densely spotted with brown; the lateral keels are generally white.

*Distribution* : India : Gujarat : Dangs district; Ganga valley, Orissa, West Bengal, Rajasthan and complete western ghats.

*Elsewhere* : Sri Lanka.

*Habits and habitat* : Habits and habitat of this species is quite similar to *Boiga trigonata*. It is said to be a very strong predator on poultry and birds like pigeon. Occasionally it feeds on bats also. It lays 7-9 eggs in a single clutch and breeds in April to August.

*Status* : Common throughout its range.

#### TRAVANCORE CAT SNAKE

##### 234. *Boiga dightoni* (Boulenger 1894)

1894. *Dipsos dightoni* Boulenger, *J. Bombay Nat. Hist. Soc.*, **8** : 528, pl. (Piramed, Travancore, London).

1943. *Boiga dightoni*, Smith, *Fauna Brit. Ind.*, **3** : 359.

The maximum length of the males 1100 mm, tail 220 mm. The color is "Pale reddish brown above, without dark markings; a series of salmon-red blotches along the back. Head pale brown, with minute blackish dots; lower parts yellowish, finely dotted with brown; the outer ends of the ventrals salmon pink" (Boulenger, 1894). Maxillary teeth 14+2; anterior palatine teeth strongly enlarged; temporals 3+3; vertebral scales are strongly enlarged; preocular 1, reaching the upper surface of the head. Supralabials 8, the 3rd-6th touching the eye. Scales in 23 rows at mid-body.

Ventrals 228-241. Subcaudals 95-102. Anal 1. Hemipenis not known.

*Distribution* : India : Travancore hills (Piramed).

*Status* : A rare species, known from 3 examples only.

### Genus 55. *Telescopus* Wagler 1830

1830. *Telescopus* Wagler, *Nat. Syst. Amphib.*, : 182. *Tarbophis* Fleischmann, 1831, *Diss. Dalmat. Serp.*, : 17 (type fallax).

1984. *Telescopus*, Mahendra, *Ann. Zool.*, **22** : 140.

This genus long known as *Tarbophis* (Boulenger, 1896; Wall, 1923, 1924; Werner, 1924; Bogert, 1940. Smith, 1943, de Witte, 1953, etc) should be called *Telescopus* Wagler 1830 in accordance with opinion 46 of the International Commission for Zoological Nomenclature (vide Mertens, 1940, pp. 53-54).

Body cylindrical or slightly compressed, with even tapering. Head subtriangular, broad in the temporal region, very distinct from the neck, flattened. Snout broad. Eye large, with vertically elliptical pupil. Scales smooth, oblique with apical pits, in 19 to 23 rows at mid-body. Vertebral scales not enlarged. Ventrals rounded. Tail moderately long; subcaudals paired. Hypapophyses absent on the posterior dorsal vertebrae.

As far as the Indian subcontinent is concerned, the genus *Telescopus* can be distinguished from the other genera of the subfamily by the following combination of characters :

Body subcylindrical; ventrals neither keeled, nor notched at their posterior borders; pupil vertical; scales in 19 to 23 rows at mid-body; vertebrae rarely if ever enlarged, almost similar in form to the contiguous dorsals.

It is represented by numerous species in North Africa, south-eastern Europe and south-western Asia to Waziristan, but by a single one (*T. rhinopoma*) in the Indian subcontinent (West Pakistan).

#### 235. *Telescopus rhinopoma* (Blanford 1874)

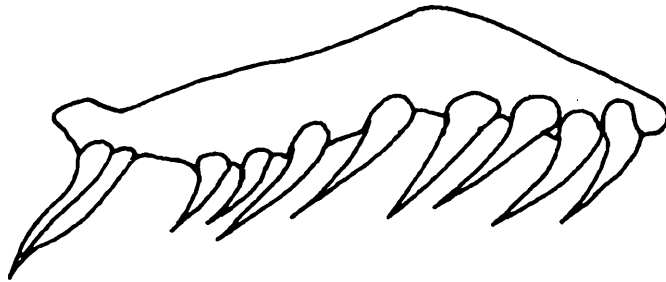
(Text fig. 130)

1874. *Dipsas rhinopoma* Blanford, *Ann. Mag. Nat. Hist.*, (4)**14** : 34.

1984. *Telescopus*, Mahendra, *Annals of Zoology*, **22** : 181.

The maximum length in male reaches upto 990 mm; tail 160 mm. Dorsal colour is pale sandy grey, with a dorsal series of 65-85 brown square or transverse spots, larger than the interspaces between them and an alternate series of smaller spots on each side. On the posterior part of the body the dorsal spots may split up in to two alternating series. Head with small dark spots or specks; labials are with dark edges; throat is white; ventral shields are dark-brown.

Nostril small, in a large, partially divided nasal. Internasals much narrowed anteriorly. Loreal elongate, touching the eye. Preocular 1, above the loreal, in contact



**Fig. 130.** *Telescopus rhinopoma* Maxilla.

with the frontal. Postoculars 2. Temporals not differentiated. Supralabials 9 or 10, the 3rd, 4th and 5th or the 4th, 5th and 6th touching the eye. Scales in 23 rows at mid-body, reducing to 17 just anterior to the vent. Vertebrae rarely if ever enlarged. Ventrals 247-280. Subcaudals 76-99. Anal undivided. Hemipenis extends up to the 9th caudal plate, not forked; the anterior 1/3 of the organ is calyculate, the cups being deeply scalloped and longer than broad; the remainder of the organ is spinose which are enclosed in a triangular sheath, except the few spines situated on the tip; these spines are in 18 longitudinal rows.

*Distribution* : Pakistan Baluchistan (in western areas of Kacha Thana, Miran Shah and Tochi valley); Sind. Waziristan, Iran (South-eastern part).

#### Genus 56. *Psammophis* Fitzinger 1826

#### SAND SNAKES

1826. *Psammophis* Fitzinger, *Neue class rept.* : 29, 30 (type sibilans).

1943. *Psammophis*, Smith, *Fauna Brit. Ind.*, 3 : 361.

1966. *Psammophis*, Minton, *Bull. Am. Mus. Nat. Hist.*, 134 : 139.

This genus includes sand snakes with slender, cylindrical body, head distinct from neck; eyes are large, with round pupil; nostrils are situated between the nasals; maxillary teeth are from 10-13, one or two in the middle are moderately enlarged, last two teeth are quite enlarged, grooved and recurved (directed backwards); body scales are smooth, obliquely arranged, in 17 rows at the middle of the body; ventral shields are somewhat rounded; tail is quite long, with divided subcaudal shields; hypapophysis are not present on the posterior vertebrae; hemipenis is short and very slender, without spines or calyces. Four species are available from India, out of which 3 have been exported from Gujarat.

#### Key to the species of Genus *Psammophis*

I. Preocular in contact with the frontal

A. One anterior temporal ..... *P. leithii*

## B. Two anterior temporals.

a. Subcaudals 121-134; two supralabials touching the eye .....*P. schokari*b. Subcaudals 72-90; three supralabials touching the eye; canthus rostralis and supraocular protuberant ..... *P. lineolatus*

## II. Preocular not reachign the forntal

A. One anterior temporal; 4 infralabials in contact with the anterior sublingual..  
..... *P. condanarus*B. Two anterior tempoarals; 5 infralabias in contact with the anterior sublingual  
.....*P. longifrons*

## AFRO-ASIAN SAND SNAKE

236. *Psammophis schokari* (Forskal 1775)1775. *Coluber scholkari* Forskal, *Deser, Anim.*, : 14 (type locality : Yemen, S. Arabia).1943. *Psammophis schokari*, Smith, *Fauna Brit. Ind.*, 3 : 363.

Total length is up to 1280 mm, tail 460 mm, in males. The colour is Yellowish, greyish, pale olive or reddish above, uniform or spotted or striped with dark; a dark streak on each side of the head, passing through the eye; lips usually with dark dots or spots; belly usually with dark dots and with 1 or 2 interrupted dark lines on each side. Head shields as in *Psammophis leithi*, but temporals 2+2. Supralabials 8 or 9, the 4th and 5th or 5th and 6th touching the eye. Ventrals 164-187. Subcaudals 118-134. Anal usually divided. Hemipenis not known.

*Habits and habitat* : Inhabits burrows in rather 'dry habitats, such as sandy desert with sparse vegetation. Minton (1955, p. 140) observes that he saw captive specimens "rake loose sand from beneath objects with a loop of the neck and thus excavate a shallow hiding place. They often climb into low bushes and bask in the morning sun." They are diurnal, but are found frequently moving about in the twilight. They feed mainly upon lizards and birds.

*Distribution* : India, North-western India.

*Elsewhere* : Pakistan (N.W.F. Provinces, Baluchistan); Afghanistan, and westward through Iran and Arabia to North Africa.

*Status* : In sufficient number in throughout its range.

## INDIAN SAND SNAKE

237. *Psammophis condanarus* (Merrem 1820)1820. *Coluber condanarus* Merrem, *Tent. Syst. Amph.*, : 107.1943. *Psammophis condanarus*, Smith, *Fauna Birt. Ind.*, 3 : 364.1966. *Psammophis condanarus*, Minton, *Bull. Am. Mus. Nat. Hist.*, 134 : 142-143.

The body of this snake is quite robust and cylindrical reaching to a maximum length of 1325 mm. in females, males are comparatively shorter; head is long and narrow, quite distinct from the neck, snout bluntly pointed; vertical length of the rostral is more than its width; loreal is one, which is long and narrow; preocular is one; postoculars are generally two; preocular not in contact with the anterior end of the frontal shield; temporal 1+2 or 1+3; supralabials are 8 or 9, 4th and 5th touching the eye; lower labials are 11; length of the posterior and anterior chin-shields are same, these are in contact with each other; upper head shields not protuberant; nasal shield incompletely divided, a suture is only from the nostril to the labial; internasal is about  $\frac{2}{3}$  as long as the prefrontals or not quite so much, frontal is long and narrow, much longer than its distance from the end of the snout, the anterior end not suddenly enlarged, not greatly broader there than in the middle, not in contact with the preocular; ventral shields are from 156-179; caudal shields in males 75-93 divided. Dorsal colouration is pale olive or brassy or buff, with 4 or 5 dark brown longitudinal stripes, distinctly edged with black; head is brownish, with distinct longitudinal markings, which extend forward to unite with the stripes on the body; ventrum is yellowish, with a black line along each side at the outer margin of the ventral shields.

*Distribution* : India, Gujarat Kachchha district : Maharashtra (Poona, Jalna, Kurnal, Berar), Punjab; Uttar Pradesh; Orissa; West Bengal.

*Elsewhere* : Pakistan (Lahore & Sind); Myanmar (Burma); Thailand; Laos and Cambodia.

*Habits and habitat* : This docile, diurnal, shy snake is extremely agile and active in movements and generally found in high grass on plains, where plenty of moisture exists; it is also found to the ascending and descending low bushes. Its food comprises the small mammals, lizards and frogs. Nothing is known about its breeding habits.

*Status* : Common in the all parts of its range.

### 238. *Psammophis longifrons* Boulenger 1896

1896. *Psammophis longifrons* Boulenger, *Cat. Sn. Brit. Mus.*, 3 : 165 (type loc. Cuddapah Hills, Madras).

1943. *Psammophis longifrons*, Smith, *Fauna Brit. Ind.*, 3 : 365.

This stout sand snake reaches to a maximum length of about 1600 mm, head is distinct from the neck; snout is quite long; eyes are moderately large with round pupil; tail long and slender, maxillary teeth are 12 or 13, two in the middle are very strongly enlarged and separated by other teeth by the wide gaps; internasals are quite small, about  $\frac{1}{2}$  or even less than half the length of the prefrontal, frontal shield is long and narrow, not longer than its distance from the end of the snout, the anterior end not suddenly enlarged, not greatly broader more than in the middle, not in contact with the preocular; temporals 2 + 2; supralabials are 8 in number, 4th and 5th touching the eye; ventral shields are 166-175, subcaudal shields are 79-93; anal

shield is divided. Dorsal colouration is grayish in the anterior part, brownish behind, the scales are edged with black, especially the scales of the vertebrals region; dorsal aspect of head is uniformly grayish-brown or the scales edged with black; ventrum in grayish or yellowish white.

*Distribution* : India : Gujarat : Valsad, Surat and Panchmahals districts. Maharashtra (Thana, Bulsar, Nagpur), Madhya Pradesh.

*Habits and habitat* : It is the stoutest among the Indian sand snakes, inhabiting rocky terrestrial areas, with plenty of vegetation including the trees and bushes, as its habits are both terrestrial and arboreal; this snake has got a special preference for scinks as food; nothing is known about its breeding habits.

*Status* : It is a rare snake and is known by few example only.

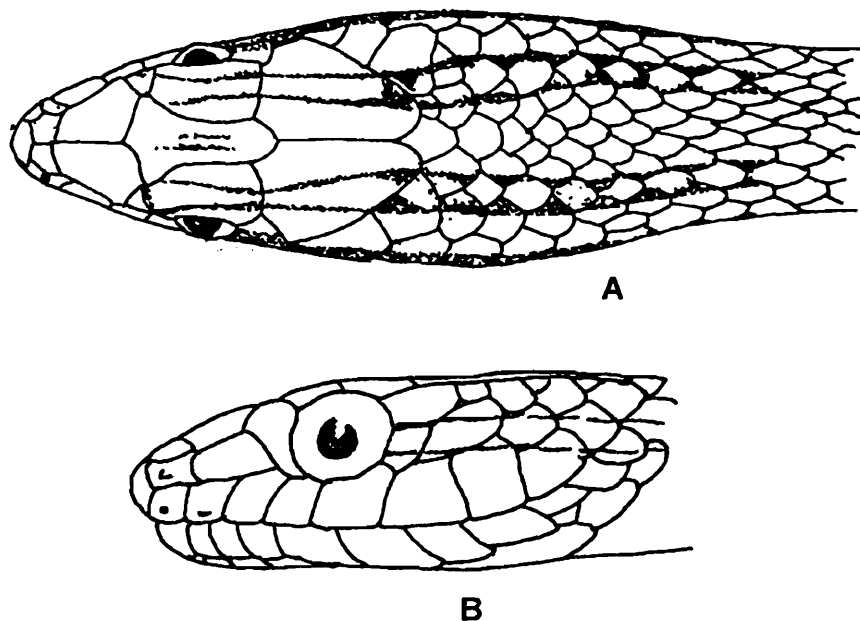
INDIAN RIBBON SNAKE  
239. *Psammophis leithi* Gunther 1869  
(Text fig. 131)

1869. *Psammophis leithii* Gunther, *Proc. Zool. Soc. London*, : 505 (type loc. sind).

1943. *Psammophis leithi*, Smith, *Fauna Brit. Ind.*, 3 : 366.

1966. *Psammophis leithi*, Minon, *Bull. Am. Mus. Nat. Hist.*, 134 : 141.

The body of this long, thin, and cylindrical snake reaches to a maximum length of about 1000 mm; head is distinct from neck; snout is long; eyes are large with round pupil; tail is quite long; maxillary teeth are from 10-12, the median ones are feebly enlarged wide gaps exist before or after, some times before and after; posterior nasal in some individuals is divided by a longitudinal suture; internasals about 1/2 to 2/3



**Fig. 131.** *Psammophis leithi*, A. Dorsal pattern of head, B. Lateral pattern of head.

as long as the prefrontals; frontal shields is quite long and narrow, much longer than its distance from the end of the snout, suddenly enlarged anteriorly where it is nearly two times broader than its width in the middle; frontal is in contact with the preocular; temporals 1+2; supralabials are 8 in number, 4th and 5th touching the eye; lower labials are 9 or 10, 5 are in contact with the anterior genials; ventral shields are 159-175 in males and 170-185 in females, subcaudals are 92-100, both in males and females; anal shield is not divided. Dorsal colouration is of ground colour or yellowish grey or pale amber or straw coloured; the colour on the lateral aspect is much darker; a pair of black to deep-brown stripes arise on internasal which continue along the whole length of the body; gradually becoming wider on the posterior side and ultimately fuse at the tail; at mid-body the stripes cover most of fifth, sixth and seventh scale rows; in many individuals the dark colour of the lateral aspects form distinct stripe posteriorly on first and second scale rows; dorsal aspect of head is with dark, median, longitudinal stripe; a dark stripe passes through the eyes; labials are of cream colour; reddish-brown spots or dashes are present on throat in most of the individuals; ventrum is uniformly yellowish-white.

*Distribution* : India : Gujarat : Surendrangar, Rajkot, Vadodara, Jamnagar and Kachchha district; Nirwand and Pachum Islands; Uttar-Pradesh, Maharashtra, Kashmir.

*Elsewhere* : Pakistan, (Waziristan, Kalat district and Thar area).

*Habits and habitat* : This snake prefers to live in grassland, marshes, clay or sandy areas, along the sea coast where plenty of shrubby vegetation is available. This is a diurnal species and is a good swimmer. The food comprises mainly the scinks, Mabuya spp; lizards also but other things like small mammals, birds and eggs etc. are absolutely rejected.

*Status* : Common snake in its range.

### STEPPE RIBBON SNAKE

#### 240. *Psammophis lineolatus* (Brandt 1836)

(Text fig. 132)

1836. *Coluber (Taphrometapon) lineolatus* Brandt, *Buil. Acad. Sci. St. Petersb.*, iii : 243 (type locality : Transcaspia).

1966. *Psammophis lineolatus*, Mintorn, *Bull. Am. Mus. Nat. Hist.*, 134 : 141-42.

*Total length* : 870 mm.; tail 190 mm.

Dorsal colour is yellowish or pale grey with longitudinal series of blackish spots or with 4 olive or brown, black-edged stripes, the median pair of stripes prolonged to between the eyes, the outer pairs to the nostrils, passing through the eyes; a dark median streak from the interorbital region to the occiput; upper lip white, the anterior shields sometimes with a blackish spot; lower parts white, dotted with greyish or olive, with one or two dark lines on each side.



**Fig. 132.** *Psammophis lineolatus* Maxilla.

Canthus rostralis and supraocular shield protuberant. Nostril crescentic, between two nasals. Frontal as in *Psammophis leithii*, in contact with the preocular. Temporals 2+2 or 2+3. Supralabials 9, the 4th, 5th and 6th touching the eye. Ventrals 174-186. Subcaudals 72-90. Anals 2.

*Distribution* : Central Asia from Transcaspia and northern Iran eastward to Mongolia and north-west China, West Pakistan (Quetta Plateau).

*Status* : A common snake, throughout the range.

#### Genus 57. *Psammodynastes* Gunther 1858

1858. *Psammodynastes* Gunther, *Cat. Col. Sn. Brit. Mus.*, : 140 (type *Psammophis pulverulenta* Boie).

1943. *Psammodynastes*, Smith, *Fauna Brit. Ind.*, 3 : 368.

Maxillary teeth 10 or 12 or 13 small anterior teeth, followed by 2 much enlarged, fang-like ones, then after a small interval, 5 small teeth followed by 2 very large grooved fangs; head distinct from neck, with angular canthus rostralis and concave lores, eyes are large, with vertically elliptic pupil; body is cylindrical; scales are smooth, without pits, in 17 : 17 : 15 rows; ventral shields are rounded; tail is moderately long; subcaudal shields are paired. Hypapophyses are present on the posterior dorsal vertebrae. This genus includes two species out of which one *Psammodynastes pulverulentus* comes under the scope of this work, which is available in Indian subcontinent.

#### MOCK VIPER

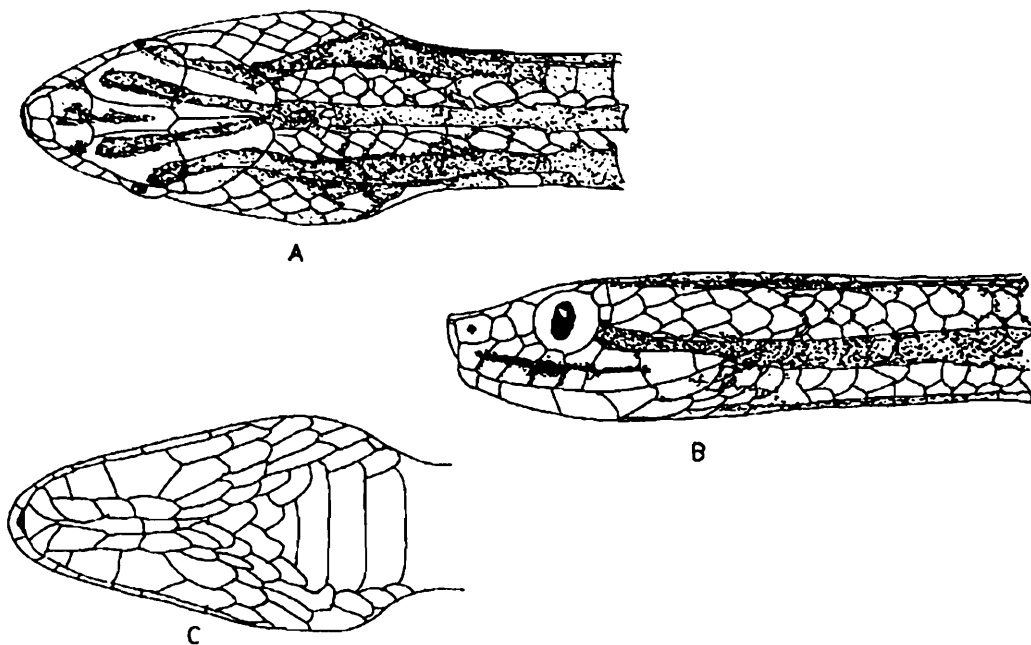
##### 241. *Psammodynastes pulverulenta* Boie 1827

(Text fig. 133 & 134)

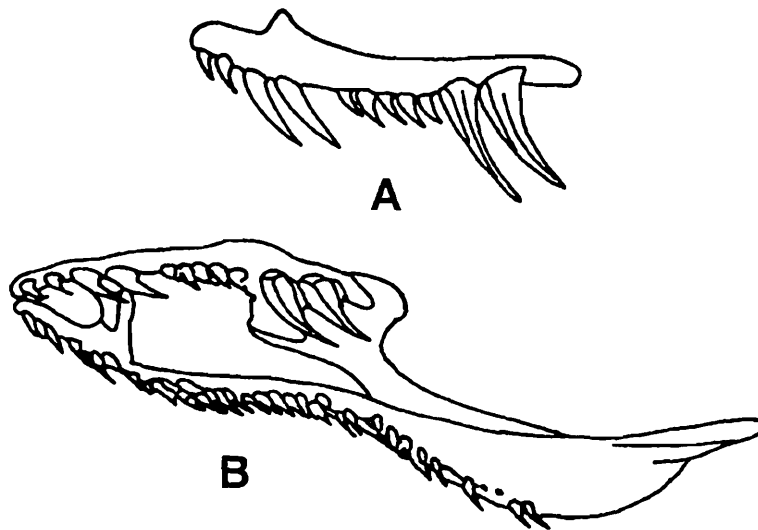
1827. *Psammophis pulverulenta* Boie, *Isis*, : 547 (Java).

1943. *Psammodynastes pulverulentus*, Smith, *Fauna Brit. Ind.*, 3 : 368.

The maximum length reaches up to 600 mm (Wall) another female measure 510 mm, tail 90 mm. The colour is very variable, ranging from yellowish or greyish to dark brown or black; with black spots or streaks, some times arranged in pairs. Usually a longitudinal stripe in the mid-dorsal line and three longitudinal stripes on



**Fig. 133.** *Psammodynastes pulverulentus* Boie. Head : A. Dorsal pattern of head and neck, B. Lateral pattern of head and neck, C. Ventral view.



**Fig. 134.** *Psammodynastes pulverulentus*, A. Maxilla, B. Palato-maxillary arch.

each flank. Head with dark symmetrical marking. Lower parts thickly powdered with brown or grey and with dark spots or longitudinal lines. Body cylindrical. Head distinct from the neck. Snout short, truncate in profile, slightly turned up in the adult, with angular dorsolateral edge (canthus rostralis) and the area between the nostril and the eye (lorcs) concave. Nostril in a single nasal. Internasals much smaller than the prefrontals. Eye large, with vertically elliptic pupil. Frontal narrow, elongate, dumb-bell shaped, between two much larger supraoculars. Loreal subquadrangular, sometimes transversely divided. Preoculars 1 or 2, the upper one much larger than

the lower, in contact with the enlarged supraocular and forming part of the canthus rostralis. Postoculars 2 to 4. Usually 8 supralabials, the 3rd-5th touching the eye. Scales smooth, without apical pits, in 17 : 17 : 17 rows. Ventrals rounded, 146-175. Subcaudals 44-71, paired. Anal 1. Hemipenis extends up to the 10th caudal plate, forked opposite the 6th caudal plate; the complete organ bears spines which are almost uniform in size, with exception of 2 large, thick basal ones on either side of the sulcus; proximal to the point of forking the spines show no definite arrangement, but opposite and distal to that point. They are set in oblique rows that join on a line opposite the sulcus; the spines of each row are joined basally by soft tissue. The sulcus is divided some distance proximal to the point of forking and has fairly prominent, smooth lips, which are almost entirely devoid of spines throughout (Pope).

*Distribution* : India : Eastern Himalayas; Assam.

*Elsewhere* : Nepal, Myanmar (Burma); Southern China; Hainan; Philippines; Malaya Archipelago and Indonesia.

*Habits and habitat* : Inhabits wooded places in the plains and hills. Barbour (1912, p. 128) and Mertens (1930, p. 314) mentioned that it occurs in highland from 700 to 1200 m. altitude, and Forcart (1953, p. 383) observed that it was captured in the Laser sunda expedition in the coastal plain at 350 m. height. Plucky and vicious; feeds mainly on frogs and lizards; viviparous, giving birth to 3-10 young at a time. Shaw (1941) saw one strike a *Rhabdophis subminiata* which died in 16 minutes.

*Status* : Fairly common in wooded country, in hilly districts in throughout its range.

#### Genus 58. *Ahaetulla* Link 1807

##### BRONZE BACKS

1807. *Ahaetulla* Link, *Beschr. Nat. Samml. Rostock*, : 73 (type *fasciata* = *Coluber ahaetulla* Linn.).

1943. *Dryophis*, Smith, *Fauna Brit. Ind.*, 3 : 370.

This genus comprises very long snakes with compressed body; head is elongated and distinct from the neck; canthus rostralis is quite strong; concave loreals; eyes are quite large, transversely oval, with horizontal pupil; tail is very long; maxilla is with 12-15 teeth, the anterior 6 to 7 gradually enlarged from before backwards or the last suddenly enlarged, followed by a gap, after which the teeth are small, 1 or 2 posterior grooved fangs situated below the posterior border of the eye; ectopeterygoid are forked anteriorly, the two branches articulate with the maxilla; nasal shield is elongated, nostril is situated in its posterior portion; frontal shield is narrow, elongate, bell-shaped; body scales are smooth, in 15 : 15 : 13 rows, obliquely arranged, vertebral rows slightly enlarged; ventral shields are somewhat rounded or with an obtuse lateral keel; posterior dorsal vertebrae are devoid of hypapophysis; subcaudal shields

are paired. Hemipenis is short, not forked, its distal end is calyculate, the cups are with scalloped edges; this area merges gradually with a spine bearing area, at the end of which there are few enormous spines proximal to the spines, there are longitudinal folds. Six species of this genus are available from Indian subcontinent, while the range extends in complete Oriental Region, Celebes and Philippine Islands.

*Ahaetulla* is a genus of arboreal, diurnal snakes, living chiefly on shrubs and bushes. They can move fast; often descent to the ground in search of food; and are ovoviviparous. They feed mainly on lizards, birds, small mammals, frogs and snakes.

### Key to the species of genus *Ahaetulle*

- I. No loreal
  - A. One postocular; snout without a dermal appendage ..... *perroteti*
  - B. Two postoculars; snout with a soft pointed projection (dermal appendage) at its anterior tip.
    - a. Dermal appendage without a median groove, formed by the rostral shield covered above by small scales ..... *pulverulenta*
    - b. Dermal appendage with a median groove above, formed almost entirely by the rostral, sometimes with small scales at its base ..... *nasuta*
- II. Loreals 1-3 (rarely absent altogether, in *A. dispar* in which case 2 postoculars and absence of dermal appendage differentiates it from the other species of Para I).
  - A. 3rd and 4th supralabials divided to form presuboculars ..... *fronticineta*
  - B. 4th supralabial only divided to form presuboculars ..... *dispar*
  - All the supralabials entire ..... *mycterizans*

### BRIGHT GREEN WHIP SNAKE

#### 242. *Ahaetulla perroteti* (Dum. & Bibr. 1854)

1854. *Psammophis perroteti* Dum. & Bibr., *Erp. Gen.*, 7 : 899 (Indes Orientales; Paris).

1948. *Dryophis perroteti*, Smith, *Fauna Brit. Ind.*, 3 : 373.

Total length of female 545 mm, tail 135 mm (590 mm., Wall). The dorsal colour is bright green (sometimes olive-brown) above, the interstitial skin black and white, forming oblique lines, sometimes all black; yellowish white or pale greenish below. A white or yellow line along the outer edge of the ventrals. Top of the head often bronze; lips paler. Snout without a dermal appendage. No loreal. Supralabials in contact with the internasals and the prefrontals. Preocular 1, in contact with the frontal. Postocular 1. Temporals 1+2 or 2+2. Supralabials 8 or 9, the 4th sometimes horizontally divided to form 1 or 2 presuboculars; the 4th and 5th touching the eye. Ventrals 136-147. Subcaudals 65-86. Anals 2.

*Distribution* : The Western Ghats (Nilgiri Hills, North Canara).

*Habits and habitat* : Inhabits hilly areas up to 5000 feet altitude. The breeding season is from July to September, 2-10 eggs are laid.

*Status* : A common snake in Nilgiri Hills.

#### BRONZY-OLIVE WHIP SNAKE

##### 243. *Ahaetulla dispar* (Gunther 1864)

1864. *Tragops dispar* Gunther, *Rep. Brit. Ind.*, 303 : 23, fig. A. (Anamalai Hills, London).

1943. *Dryophis dispar*, Smith, *Fauna Brit. Ind.*, 3 : 373.

Total length of female 725 mm, tail 240 mm. The colour as in *Ahaetulla perroteti*. Snout without a dermal appendage, not twice as long as the eye. Internasals and sometimes the prefrontals in contact with the supralabials. Loreals 1 to 3, rarely absent. Preocular 1, in contact with the frontal. Postocular 2. Supralabials usually 8, the 4th divided forming 1 or 2 presuboculars, the 5th touching the eye. Temporals 2 + 2 or 2 + 3. Scales on the sacral region smooth, or feebly keeled. Ventrals 136-156. Subcaudals 78-119. Anals 2.

*Distribution* : The Western Ghats (Nilgiri Hills to Travancore).

*Habits and habitat* : It inhabits hilly terrain in Anaimalai Hills up to 8000 feet altitude; one female captured there contained 4 fully grown young.

*Status* : Available but not in abundance.

#### ASSAM BRIGHT-GREEN WHIP SNAKE

##### 244. *Ahaetulla fronticinctus* (Gunther 1858)

1858. *Dryophis fronticinctus* Gunther, *Cat. Col. Sn. Brit. Mus.*, : 158 (type locality unknown).

1943. *Dryophis fronticinctus*, Smith, *Fauna Brit. Ind.*, 3 : 374.

Total length in female 98 mm, tail 310 mm. Color is as in *Ahaetulla perroteri*. Snout without a dermal appendage, 2 to 2.5 times as long as the eye. Nasals usually, but not always in contact with each other. Loreals 2, separating the suprelabials from the nasals and prefrontals. Preocular 1, touching or narrowly separated from the prefrontal. Postoculars 1 to 2. Temporals 2 + 2 or 3+3. Supralabials 8, the 1st and 2nd entire, the 3rd and 4th subject to both horizontal and vertical division, the 5th touching the eye. Scales of the sacral region keeled, more strongly in the male than in the female. Ventrals 168-196. Subcaudals 115-151. Anals 2. Hemipenis as given under genus.

*Distribution* : Assam, Darjeeling.

*Elsewhere* : Lower Burma (Myanmar) Stoliczka (1870) reports that it is "Abundant on the bushes which fringe the banks of many of the tidal rivers of lower Burma" and Theobald (1876) says that it is by no means scarce in the mongrove swamps on the Arakan coast. It is, however, found far Inland, away from the mouths of rivers, in Assam and in the Darjeeling District.

*Habits and habitat* : Arboreal species, lives on the bushes on the banks and mouths of rivers in Myanmar but the specimens from Assam and Darjeeling indicate its terrestrial-arboreal habits; the species is viviparous.

### BOIE'S WHIP SNAKE

245. *Ahaetulla prasinus* (Boie 1827)

(Text fig. 135)

1827. *Dryphis prasinus* Boie. *Isis.*, : 545 (Java).

1943. *Dryophis prasinus*, Smith, *Fauna Brit. Ind.*, 3 : 375.

The total length in males 1580 mm, tail 525 mm, and in females 1970 mm, tail 670 mm. The dorsal colour is green, grey, yellow, buff or cream, the interstitial skin is black and white, forming oblique lines; ventrum is paler; a white or yellow line along the outer margin of the ventrals, usually absent in specimens of pale colouration. Snout is acuminate, without dermal appendage, 2 to 2.25 times as long as the eye; nasal shields are in contact with the labials; prefrontals separated from them by 2 or 3 loreals; preocular 1, in contact with the frontal; postocular 2; temporals 2+2 or 2+3; supralabials 9, all are entire, 4th, 5th and 6th touch the eye; anterior genials much shorter than the posterior; scales of the sacral region are strongly keeled in the male, the keel often broken into tubercles and is pigmented with black; ventrals 194-235; subcaudals in males 165-187, in females 151-172; anals 2. Hemipenis as given under genus.

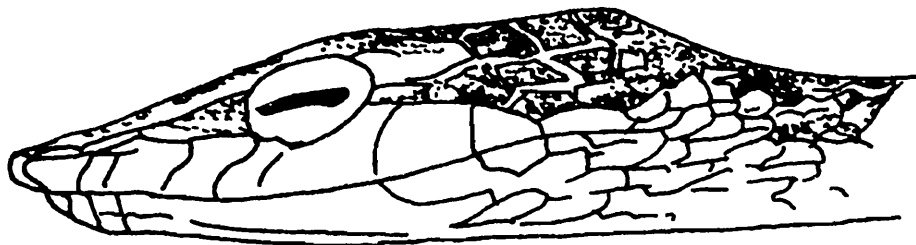


Fig. 135. *Ahaetulla prasinus* (Boie). Lateral pattern of head.

*Distribution* : India : West Bengal (Jalpaiguri district); Eastern Himalayas (Sikkim).

*Elsewhere* : The complete Indo-chinese region as far north as the Triangle in Upper Myanmar (Burma) to the Malay Peninsula and the Indo-Australian Archipelago; Pulo condore of coast off Cochin-china.

*Habits and habitat* : It is most docile and gentle snake never makes any attempt to bite even on mishandling. It has the habit of keeping its tongue out for a considerable time. It inhabits, plains, foot-hills and hills up to a low altitude. It is viviparous and records indicate that 6 young are produced with the average length of 240 mm.

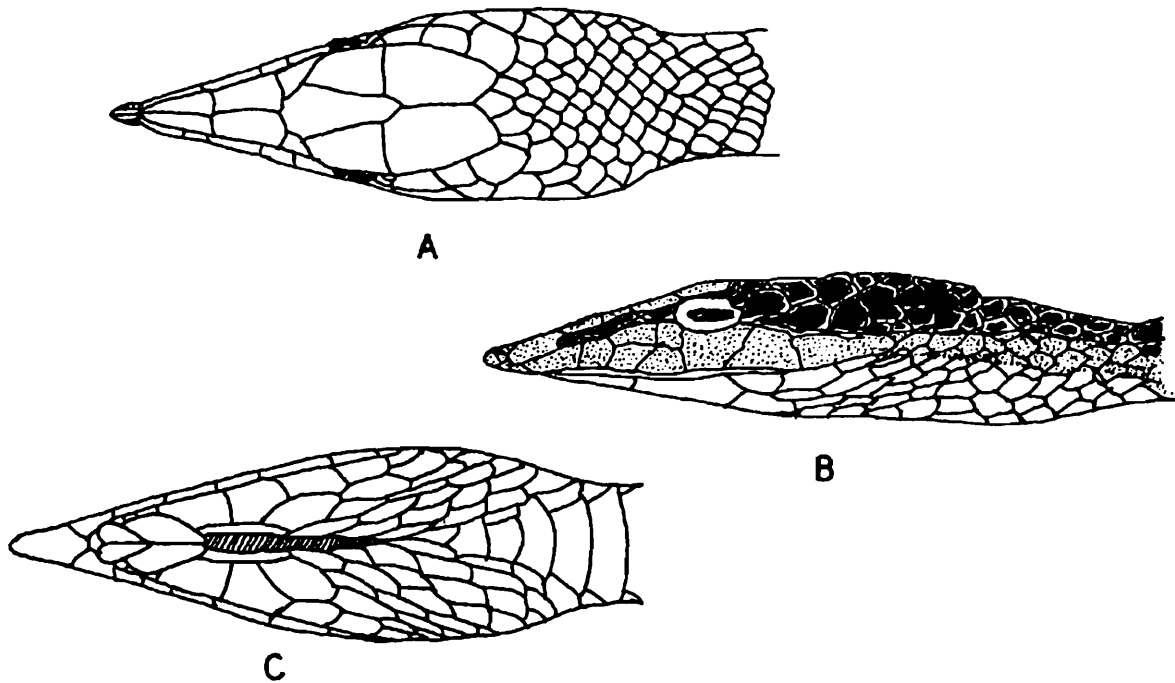
*Status* : It is common snake in throughout its range.

**COMMON GREEN WHIP SNAKE**  
**246. *Ahaetulla nasutus* (Lacepede 1789)**  
 (Text figs. 136 & 137)

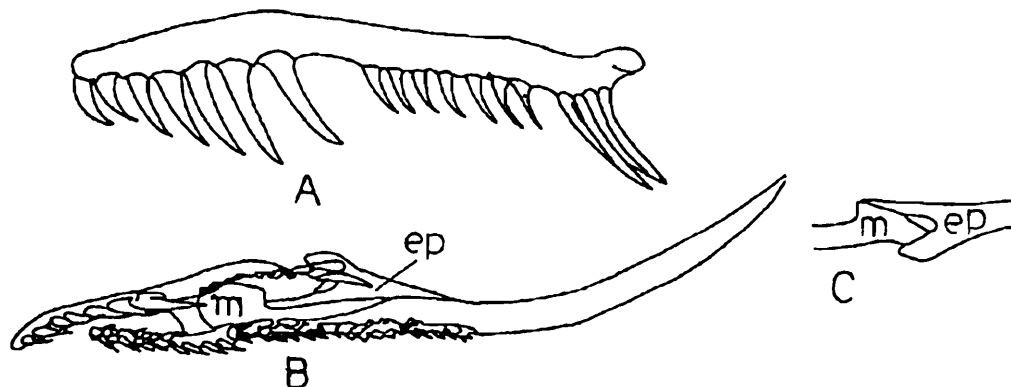
1789. *Coluber nasutus* Lacepede, *Hist. Nat. Serp.*, 1 : 100.

1943. *Dryophis nasutus*, Smith, *Fauna Brit. Ind.*, : 376.

This thin-bodied, laterally compressed snake reaches to a length of 1855 mm in males and 2660 mm in females; head is distinct from the neck; snout is long, acuminate and terminates in a dermal beak shaped appendage, which is quite variable, shorter than the eye; snout bears a median groove above and is formed by the rostral and possesses small scales at the base; length of the snout without the dermal appendage



**Fig. 136.** *Ahaetulla nasutus* (Lacepede). Head : A. Dorsal view, B. Lateral pattern of head, C. Ventral view.



**Fig. 137.** *Ahaetulla nasutus*, A. Maxilla, B. Palato-maxillary arch, C. Articulation of maxilla (m.) and ectopterygoid (ep.)

is 2.5 to 3 times that of the eye; loreal scale is missing; the internasals and prefrontals are in the contact with the labials; preocular is one and it is quite large and remains in contact with the frontal shield; postoculars are two; temporals 1+2 or 2+2; supralabials are 8, 3rd and 4th, or one only, divided to form 1 or 2 presuboculars, fifth supralabial is touching the eye; body scales are smooth, in 15 : 15 : 11 rows, vertebral row is larger than other dorsal rows; ventral shields are 166-207, laterally notched; sub-caudals shields are 156-180 in males and 135-152 in females; anal shield is divided; hemipenis as given in generic characters. Dorsal colouration is verdant green, the interstitial skin is black and white, forming oblique lines which are most distinct with a white or yellow line is present along the outer margin of the ventrals; in certain individuals lips are yellowish; throat is white; with a faint blue tinge. Many individuals exhibit remarkable colour variations as they may be coloured in yellow, brown or buff dorsally. The belly may be grayish or rosy, some of the rare individuals are coloured profusely with pink.

*Distribution* : India : Gujarat : Bharuch, Valsad, Junagarh and Dangs district; Peninsular India, excluding the Ganga valley west to Patna, Bengal.

*Elsewhere* : Complete Indo-Chinese region, Vietnam, Thailand, Cambodia, Cochinchina, Sri Lanka, Burma.

*Habits and habitat* : This is a most agile, diurnal arboreal species generally found in the dense clusters and branchings of the vegetation. It is at a perfect ease while going from branch to branch and even from a twig to twig and needs slightest support. The snake is most gentle in disposition but on extreme provocation and by rough handling can bite. Its food comprises the lizards, small mammals, birds, small snakes and amphibians. It is said to be drinking (sucking) water (dewdrops from the leaves) by the help of its long beak-like dermal appendage. It is a viviparous species and give birth to the young ones, which may number from 3-22 at a time; breeding season starts in March and extends upto the December.

*Status* : The species is gradually becoming vulnerable on account of habitat loss and skin trade.

#### BROWN WHIP SNAKE

247. *Ahaetulla pulverulentus* (Dum. & Bibr. 1854)  
(Text fig. 138)

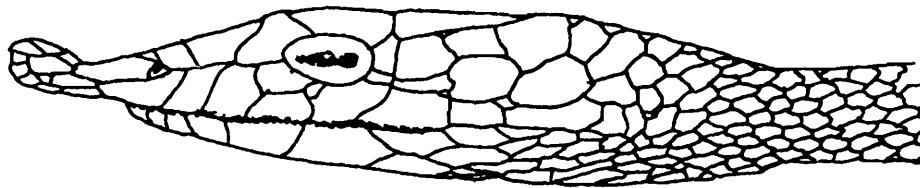
1854. *Dryinus pulverulentus* Dumeril & Bibron, *Erp. Gen.*, 7 : 812.

1943. *Dryophis pulverulentus*, Smith, *Fauna Brit. Ind.*, 3 : 378.

The Brown Whip Snake reaches to a maximum length of about 1600 mm. in males and 2450 mm. in females; the species is quite similar to *nasutus* but differs in the following ways : Dermal appendage is longer, sometimes longer than the eye, formed below by the rostral; covered above by small scales, no median groove above; nasal

shields are generally in contact with one another in front of the internasals; ventral shields are 179-203; subcudal shields are from 151-208; anal shield is divided; hemipenis is also like *nasutus*. Dorsal colouration is grayish or brownish, powdered with brown and with black transverse or oblique spots, above; a dark-brown rhomboidal spot is present on the top of the head and a brown stripe on either side passing through the eye.

*Distribution* : India : Gujarat Junagarh and Dangs districts; Western Ghats (Karwar, North Kanara, Nilgiris, Castle Rock, Nellampatty hills, Travancore).



**Fig. 138.** *Ahaetulla pulverulentus* (Dumeril & Bibron). Lateral view of head.

*Elsewhere* : Sri Lanka.

*Habits and habitat* : It is found in plains as well as in hills. The species is arboreal and diurnal like *nasutus*; its food is also like *nasutus*. Nothing is known about other habits.

*Status* : The species is vulnerable, on account of habitat loss.

#### Subfamily HOMALOPSINAE Boulenger 1890

#### FRESH WATER SNAKES

#### Key to the genera of subfamily Homalopsinae

- I. Ventrals well developed, not keeled.
  1. Nasal shields in contact with one another.
    - A. Parietals well developed, scales smooth ..... *Enhydris*
    - B. Parietals less developed but distinct, scales strongly keeled. .... *Homalophis*
    - C. Parietals more or less broken up; scales keeled ..... *Cerberus*
  2. Nasal shields separated by the internasal.
    - A. Body not elongate, scales in 17 rows ..... *Gerardia*
    - B. Body not elongate, scales in 25-29 rows ..... *Fordonia*
    - C. Body very elongate, scales in 17 rows ..... *Cantoria*

II. Ventrals narrow, bicarinate,

1. Scales smooth ..... *Bitia*  
 2. Scales keeled; 2 rostral appendages ..... *Herpeton*

Genus 59. *Enhydris* Sonn. & Latr. 1802

1802. Sonn. & Latr. *Hist. Nat. Rept.*, iv, : 200.

1966. *Enhydrus*, Minton, *Bull. Amer. Mus. Nat. Hist.*, 134 : 143.

Body usually cylindrical, with smooth scales. Head depressed, scarcely distinct from neck, with large shields. Eye small, with vertically elliptical pupil. Nasals in contact, semidivided, the nasal cleft extending from the nostril to the 1st and 2nd supralabial. Loreal present. Parietals entire, not fragmented. Ventrals rounded; anal usually divided; subcaudals paired.

*Range* : Species of this genus range from West Pakistan on the west to Queensland, Australia, in the east. It is not recorded from Philippines, although it occurs in Taiwan and as far north as Nanking on the mainland of China. Fifteen of the 22 species occur in the south-east corner of the Asiatic continent, including Malaya, Thailand, Cambodia, Laos and South and North Vietnam. Only seven species are found in the Indian subcontinent.

**Key to the species of the Genus *Enhydris***

- I. 1st and 2nd pairs of infralabials forming median suture; supralabials posterior to the eye divided into tiers ..... *punctata*
- II. Only 1st pair of infralabials forming median suture; supralabials posterior to eye not divided.
- A. Nasal cleft extending to the internasal.
- a. Scales in 27 rows at mid-body; sublinguals present ..... *dussumierli*  
 b. Scales in 29 rows as mid-body; sublinguals absent ..... *pakistanica*
- B. Nasal cleft extending to the 1st and 2nd supralabials.
- a. Internasal single (rarely divided), in contact with loreal; scales in 21 (rarely 23) rows at mid-body ..... *enhydris*  
 b. Internasal not in contact with loreal.
- a. Internasal divided; scales in 27 or 29 (rarely 33) rows at mid body ..... *sieboldi*
2. Internasal single.
- i. Scales in 19 rows at midbody ..... *plumbea*  
 ii. Scales in 25 (rarely 23) rows at midbody ..... *maculosa*

248. *Enhydris plumbia* (Boie 1827)

(Text fig. 139)

1827. *Homalophis plumbea*, *Isis*, : 560.1984. *Enhydris plumbia*, Mahendra, *Annal of Zoology*, 22 : 127.

The maximum length in female reaches up to 380 mm; tail 50 mm. The dorsal colour is brown or greyish olive, margined with deep brown or black; upper lip and venter white or pale yellow; ventrals with or without black dots medially; tail with a median black line or series of dots.

Short rounded snout; indistinct head. Nasal cleft extending from nostril to 1st or 2nd supralabial, Internasal single, not in contact with loreal. Supralabials 8; one divided; the 4th and 5th touching the eye. Postoculars 2. Anterior pair of sublinguals in contact with the first 5 or 6 infralabials. Scales in 19 rows at mid-body. Ventrals 112-139.

*Distribution* : Myanmar as far north as lat. 22°, south-eastern China as far north as Nanking; Hainan; Formosa (Taywan); Hong-Kong; Malaysia (peninsula as well as archipelago); Thailand; North-vietnam; South Vietnam; Cambodia; Indonesia (from Sumatra to Bali and Celebes).

*Habits and habitat* : Inhabits the vicinity of streams in the hilly areas up to 3000 feet altitude. The snake is extremely active and bites savagely on mishandling. The main food comprises frogs and fish.

*Status* : A common snake in throught its range.

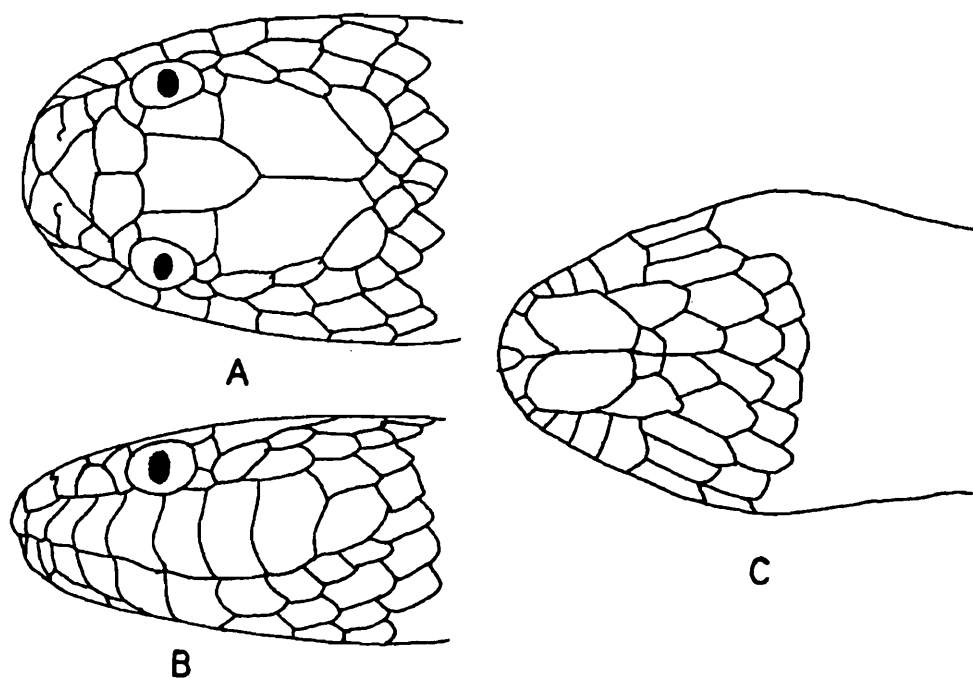


Fig. 139. *Enhydris plumbea*. Head : A. Dorsal view, B. Lateral view, C. Ventral view.

249. *Enhydris enhydris* (Schneider 1799)  
(Text fig. 140)

1799. *Hydrus enhydris* Schneider, *Hist. Amph.*, 1 : 245. ("Indiae orientales").

1943. *Enhydris enhydris*, Smith, *Fauna Brit. Ind.*, 3 : 383.

Total length in male, 64.5 mm; female, 810 mm. Color is brown, gray, or olive above, with a mid-dorsal and a pair of dorsolateral stripes. Lower surface yellow or white, bordered by brown or gray, with a median series of spots, which may be confluent. Head brown or gray above, indistinctly variegated. In young specimens the mid-dorsal stripe is divided mesially by a vertebral white line; and the dorsolateral stripes, pale yellow in color, extend forwards to meet between the nasals. Nasal cleft extending from nostril to 1st supralabial. Internasal single (rarely divided), in contact with loreal. Supralabials 8, none divided; the 4th touching the eye. Postoculars 2 (rarely 1). Scales in 21 (rarely 23 rows) at mid-body. Ventrals 141-174.

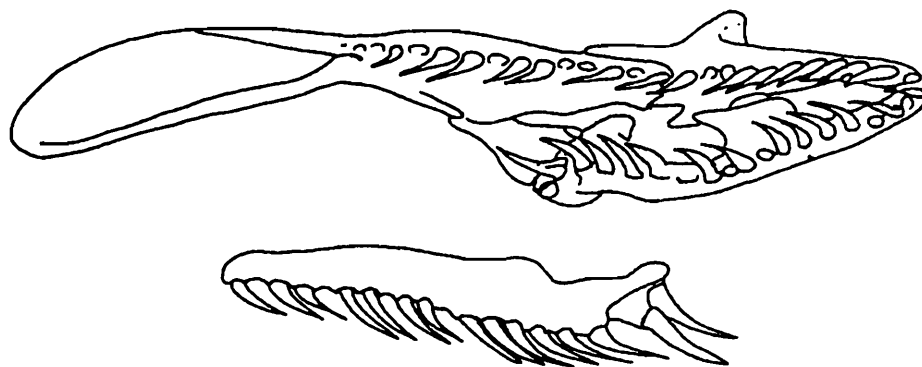


Fig. 140. Maxilla and palato-maxillary arch of *Enhydris enhydris*.

*Distribution* : India : Madhya Pradesh; Uttar Pradesh; Andhra Pradesh (Vizagapatam district); Bihar; Orissa; West Bengal as far north as Himalayan foothills; Assam.

*Elsewhere* : Bangladesh, Myanmar (Central and southern portion); Thailand, Malay Peninsula; Cochin China; Cambodia; Laos; Vietnam and China.

*Habits and habitat* : Inhabits ponds, irrigated fields, various water bodies and slow running canals. It is a gentle snake and never attempts to bite even on rough handling. Its main food comprises the fishes but in lean period devours lizards and frogs also. It is viviparous and produce 6-18 young at a time.

*Status* : Fairly common in throughout its range.

250. *Enhydris maculosa* (Blanford 1879)

1854. *Hypsirhina maculata* (non Dum. & Bibr.) Blanford, 1879 *J.A.S. Bengal*, 48 : 130.

1984. *Enhydris maculosa*, Mahendra, *Annals of Zoology*, 22 : 128.

Total length : 300 mm; tail 45 mm.

The dorsal colour is ashy black with a black median stripe on the nape extending from the parietals to the occiput. Back with 3 rows of largish, irregularly-shaped spots. A white or yellow line with zigzag edges runs from the angle of the mouth on the side of the body. Lower parts whitish, the outer scale-rows and outer edges of the ventrals dark-edged. A series of dark spots down the middle of the ventrals. Tail black.

Nasal cleft extending from nostril to the 1st supralabial. Internasal single, separated from loreal. Supralabials 7, the 4th touching the eye. Postoculars 2. Anterior pair of sublinguals in contact with 3 or 4 infralabials. Scales in 25 (rarely 23 rows) at mid body. Ventrals 123-157; subcaudals 33-45; anals 2.

*Distribution* : Burma, China and Sumatra.

*Status* : A rare snake, known only from a few specimens.

#### 251. *Enhydrus dussumieri* (Dum. & Bibr. 1854)

1854. *Eurostus dussumieri* Dum. & Bibr., *Erp. Gen.*, vii : 953.

1943. *Enhydrus dussumieri*, Smith, *Fauna Brit. Ind.*, 3 : 389.

Total length is 670 mm, tail 750 mm. Color is brown above, with three blackish longitudinal stripes—one vertebral and two dorsolateral. Ventrals and outer 3 scale-rows whitish, spotted with brown. Nasal cleft extending from nostril to internasal. Internasal divided, narrowly separated from the loreal. Supralabials 8; none divided; the 4th touching the eye. Loreal in contact with the first three supralabials. Postoculars 2. Anterior pair of sublinguals in contact with the first 4 or 5 infralabials. Scales in 27 rows at mid-body. Ventrals 143-150; subcaudals 28-39; anal divided.

*Distribution* : India : South-western coast of India, and Bengal.

*Status* : A rare snake, the species is based on a single female type specimen.

#### 252. *Enhydris sieboldi* (Schlegel 1837)

1837. *Homalopsis sieboldi* Schlegel *Phys. Serp.*, ii, : 349, pl. xiii, Figs. 4-5.

1943. *Enhydris sieboldi*, Smith, *Fauna Brit. Ind.*, 3 : 389.

Total length is 780 mm, tail 110 mm. Color is yellow or pale brown; head with three dark brown longitudinal stripes confluent between the eyes; body with a series of dark brown elliptical or rhomboidal transverse blotches separated by narrow interspaces; a series of roundish spots on each side alternating with the dorsal spots; lower parts white, variegated with yellow and dark brown spots. Nasals cleft extending from nostril to first supralabial. Internasal divided, not in contact with loreal. Supralabials usually 8, rarely 7 : the 4th touching eye. Scales in 27 or 29 (rarely 33 rows) at mid-body. Ventrals 143-156.

*Distribution* : India : Uttar Pradesh (Agra, Fyzabad); Bihar (Pusa, Patna, Champaran); Madhya Pradesh (Saugar); Maharashtra (Bombay); Karnataka; West Bengal; Assam (Samaguting); Kerala (Trivandrum, Tracancore).

*Elsewhere* : Bangladesh (Mymensingh); Myanmar (Pegu).

*Status* : Available but no where common.

### 253. *Enhydris pakistanica* Mertens 1959

1959. *Enhydris pakistanica* Mertens, *Senck. bid.*, **40**(3/4) : 117.

1984. *Enhydris pakistanica*, Mahendra, *Annals of Zoology*, **22** : 125.

*Colour* : Dorsally, blackish mid-longitudinal stripe, bordered on each side by a broad lateral one of olive or brown colour, extending from the snout to the tip of the tail. In addition to it, a ventrolateral dark brown stripe extends anteriorly on each side along the labial border to the rostral. On the belly, throughout the length of the body on each side, are two yellow stripes with a mesial black or brown line between them.

Nasal cleft extending to internasal. Two internasals, in contact with or narrowly separated from loreal. Supralabials 8 or 9, the 4th or 4th and 5th touching the eye. Postoculars 2. Sublinguals absent; gulars arranged in three longitudinal rows on each side of the mental groove. Scales in 29 rows at mid-body. Ventrals 153-162; about twice the width of the adjacent dorsal scales. Subcaudals 70-92.

*Distribution* : West Pakistan.

*Status* : Rare snake.

### Genus 60. *Homalopsis* Kuhl & Hasselt 1822

1822. *Homalophis* Kuhl and Hasselt, *Alg. Konst. Lett. Bode*, **1**(7) : 101 and *Isis*, 1822 : 474.

1984. *Homolophis*, Mahendra, *Annals of Zoology*, **22** : 121.

Body cylindrical; head distinct from neck, with large shields. Nasals in contact with each other. Internasal usually single, but divided by a longitudinal suture in some specimens; lying behind the nasals. One or more loreals. Supralabials 10 to 13. A pair of parietals present. 2-3 pairs of sublinguals in a transverse row, the inner largest and in contact with the first three infralabials. Scales striated and strongly keeled, in 37 to 41 rows at mid-body. Ventrals well developed, 157-173. Anal divided. Subcaudals single, 65-106.

### 254. *Homalopsis buccata* (Linnaeus 1754)

(Text fig. 141)

1754. *Coluber buccatus* Linnaeus, *Mus. S.R.M. Ad. Frid. regis.*, : 29. pl. xix. fig. 3, and *Syst. Nat.*, 10th ed., 1758, : 217.

1984. *Coluber buccata*, Mahendra, *Annals of Zoology*, **22** : 121.

Character as in the genus.

Total length : Male 760 mm; female 1310 mm.

Ko Ko Gyi (1970, pp. 139-140) has made a statistical study of the snoutvent ratios of adults and young of both sexes in numerous specimens from Burma. He concludes that "adult males have longer tails than adult females, and the coefficient of difference is highly significant. The greater tail length of the adult male is presumably an adaptation to accommodate the hemipenis."

Colour : "The head is pale brown or pale gray with a V-shaped dark brown mark on the snout, and a v-shaped mark on the top of the head, which laterally joins a postorbital stripe. The latter actually originates anterior to the eye, passes through the eye, and continues posteriorly to join the first black crossbar on the neck, or terminates just posterior to the angle of the mouth. The first black crossbars bears a narrow, anterior projection along the vertebral line. The dorsum and sides of the body are black, gray, or pale brown. There are 19 to 51 narrow, black-edged, yellow crossbars on the body... From 12 to 16 similar yellow crossbars, one or two scales in length, are on the tail. The venter is white or yellow with a series of small black spots on the lateral edges of the ventrals.

"The young are marked like adults, but the crossbars are darker, the interspaces are white or yellow-ochre, and the entire ventral surface is white or lemon-yellow." (Ko Ko Gyi, 1970, p. 139).

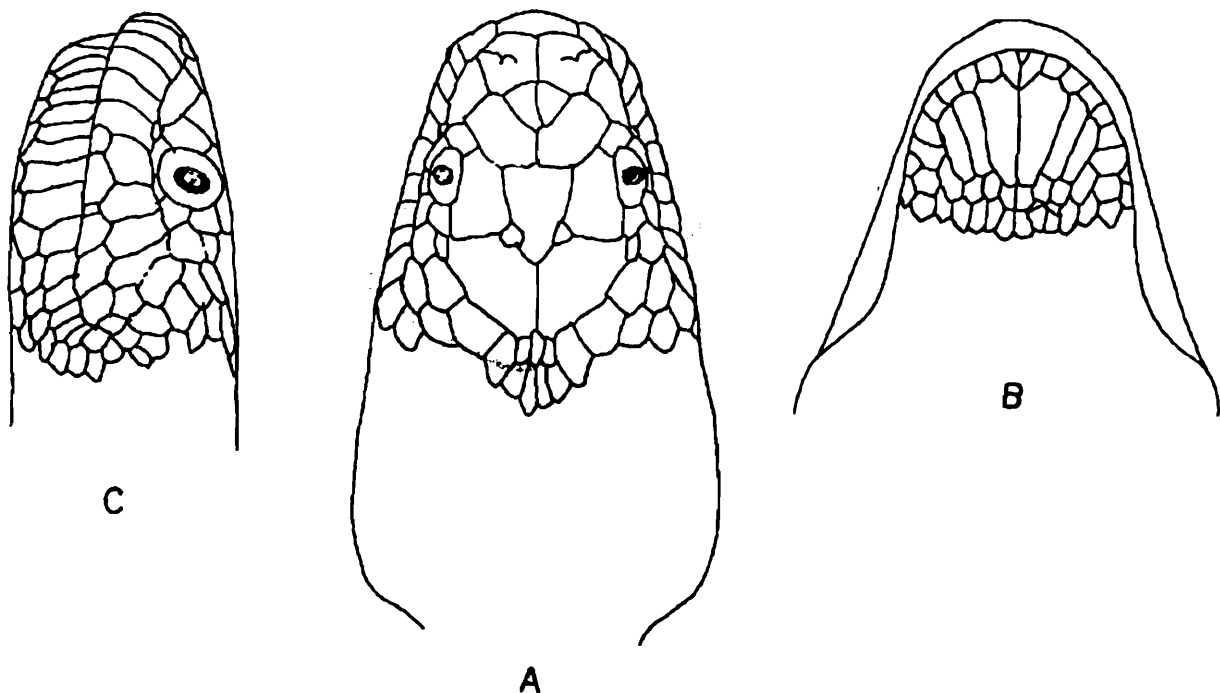


Fig. 141. *Homalophis buccata*. Head : A Dorsal view, B. Ventral view, C. Lateral view.

*Habits and habitat* : Said to be of a sluggish disposition; feeds on fish and frogs; viviparous, giving birth to 9-21 young at a time.

*Distribution* : Rivers, canals, and ponds of Burma and Indo-China, Thailand, Cambodia, Cochin-China, the Malay Peninsula and Archipelago and China.

*Status* : Common in most parts of its range.

#### Genus 61. *Cerberus* Cuvier 1829

1829. *Cerberus* Cuvier, Reg. anim., (2nd ed.) 2 : 81 (type *Coluber cerberus*).

1943. *Cerberus*, Smith, *Fauna Brit. Ind.*, 3 : 392.

This genus of subfamily Homalopsinae includes stout bodied, cylindrical, aquatic snakes with a distinct head, small eyes, moderately long tail; dentition well developed, maxillary teeth are 12-17; nostrils are situated on the upper surface of the snout; head shields generally broken up; hypapophysis are present throughout the vertebral column; body scales are in 21-29 rows; ventral shields are well developed; subcaudal shields are paired. This includes 3 species out of which one is available in India.

#### DOG FACED WATER SNAKE

255. *Cerberus rhyngops* (Schneider 1799)

(Text fig. 142)

1799. *Hydrus rhyngops* Schneider, *Hist. Amphib.*, 1 : 246 (Based on Russell, pl. 17).

1943. *Cerberus rhyngops*, Smith, *Fauna Brit. Ind.*, 3 : 393.

The maximum length of this long bodied snake reaches 850 mm in males and 1180 mm in females; head is distinct from the neck; snout is long but broadly rounded; nostril is sutuarally connected with the first labial; internasal is divided by a longitudinal suture; frontal shield is broken into small scales, the anterior half portion is generally distinct; loreal scale is large, higher than long, extending well on to the upper surface of the snout in contact with or just separated from, the internasal; preocular 1; postocular 1, suboculars are 2; temporals are small and scale-like; supralabials are 9 or 10, 5th and

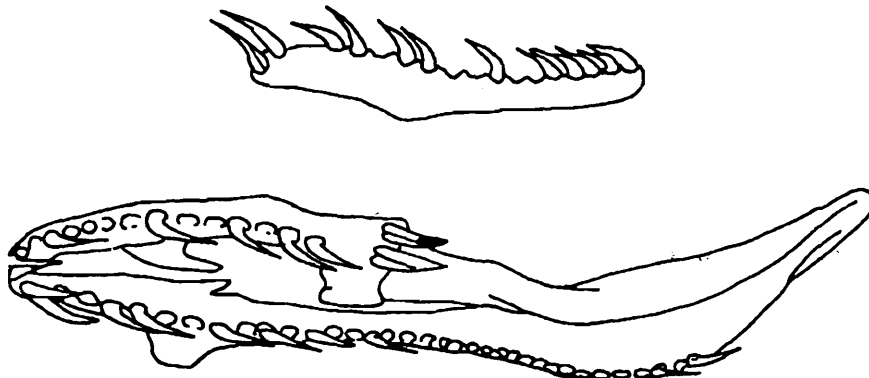


Fig. 142. Maxilla and palato-maxillary arch of *Cerberus rhyngops*.

6th below the eye, the last 2 or 3 are horizontally divided; genial are in pairs, the anterior most is largest and remains in contact with 4 infralabials, the remaining two pairs are separated by small scales and partly wedged in between the anterior genials and the labials. Body scales are striated and strongly keeled, in 23-25 rarely in 21, rows the lateral scales are slightly larger than the median dorsal; ventral shields are from 122-159 (generally 137-159); subcaudal shields are from 50-68; anal shield is divided. Dorsal colouration is grayish, brownish or olivaceous, with dark spots or cross-bars; lateral aspects of head is with black streaks, which pass through the eye and on the neck, these are most prominent in juveniles; ventrum is light yellow or deep-yellow; variegated or barred with black, in some individuals the ventral aspects blackish or dark-gray; the outer 3 scale rows are generally yellow.

*Distribution* : India : Gujarat : Valsad (Purna river), Vadodara (Mahi river) and Surat (Tapti river) district.

*Elsewhere* : Coasts and tidal rivers of India and Vietnam (Indo-China) from Bombay to Cochin-China; Andaman and Nicobar Islands; Malaysia, Singapore and Sri Lanka.

*Habits & Habitat* : It is most agile nocturnal snake inhabiting the holes and crevices in the estuaries of tidal rivers; it is a remarkable swimmer and feeds on fishes, frogs and toads. The species is generally docile and never makes any attempt to bite; it is viviparous and gives birth to young numbering from 6-28 at a time.

*Status* : A common snake.

#### Genus 62. *Gerardia* Gray 1849

1849. *Gerarda* Gray, *Cat. Sn. Brit. Mus.*, : 77 (type *bicolor*).

1943. *Gerardia*, Smith, *Fauna Brit. Ind.*, 3 : 394.

This monotypic genus includes the snakes with cylindrical body, small eyes with vertical pupil, head is not distinct from the neck and is with large shields; nasal shields are distinct, separated by a internasal; nostril is pierced in nasal; loreal shield is present; maxillary bone extends beyond the palatine, with 11-13 teeth, followed by two strongly enlarged, recurved, grooved fangs; teeth are available on mandibles also, which are subequal; body scales are smooth, in 17 rows; ventral shields are well developed; tail is quite short, subcaudal shields are paired. Distribution, is as given under the description of the species of the genus.

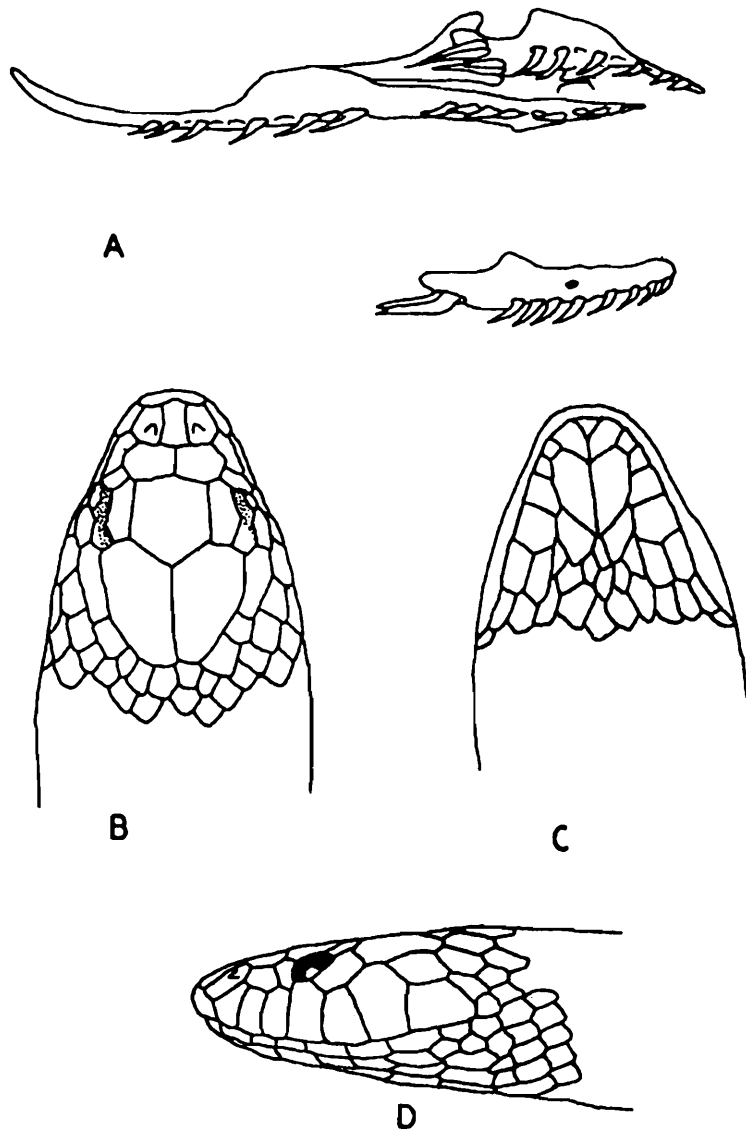
#### GLOSSY MARSH SNAKE

256. *Gerardia prevostiana* (Eydoux and Gervias 1832-1837)

(Text fig. 143)

1832-1837. *Coluber (Homalopsis) prevostianus*, Eydoux & Gervais, in *Guer. Mag. Zool. Cl.*, 3 : 5, Col. pl. 15 (Manila).

1943. *Gerardia prevostiana*, Smith, *Fauna Brit. Ind.*, 3 : 394.



**Fig. 143.** *Gerardia prevostiana* (Edoux and Gervais). A. Palatomaxillary arch and maxilla, B. Dorsal view of head, C. Ventral view of head, D. Lateral view of head.

The cylindrical snake reaches to a maximum length of about 587 mm. Besides the characters as given under the genus following are the main characters of the species. Frontal shield is much broader than the supraocular; one pre and 2 postocular shields are present; loreal scale is not in the contact with the internasal; temporals are 1+2 or 2+2; supralabials are 8, fourth touching the eye; 8th supralabial is quite small, it is missing in many individuals; 2 pairs of genials are present, the anterior pair is much larger than the posterior pair, in contact with the 4 labials, posterior pair is generally separated by a row of scales; dorsal scales are subequal, in 17 rows; ventral shields are, 145-153, subcaudal shields are 29-36; anal is divided; light to dark-gray or deep brown, generally uniformly coloured; upper lip, chin and 3 outer rows of scales are white; ventrum is whitish with dark margins, in many individuals the ventrum is entirely gray.

*Distribution* : India : Gujarat : Valsad district (Purna river); Coasts and tidal rivers of India (Bombay and Kerala).

*Elsewhere* : Sri Lanka (Kelani river); Burma (Gulf or Martaban); coastal parts of Malaysia.

*Habits and habitat* : It is nocturnal species living on fishes, crabs and crustaceans. Nothing is known about other habits.

*Status* : A common snake.

### Genus 63. *Fordonia* Gray 1842

1842. *Fordonia* Gray, *Zool. Misc.*, : 67.

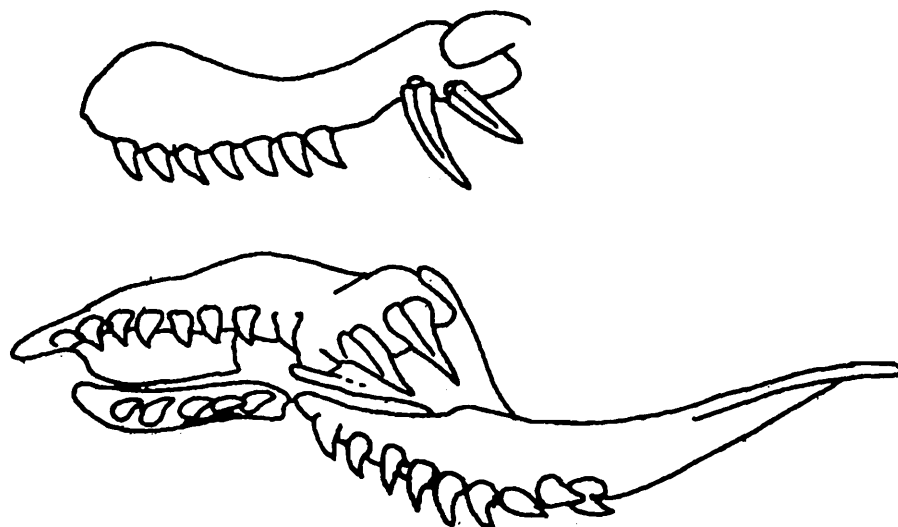
1943. *Fordonia*, Smith, *Fauna Brit. Ind.*, 3 : 396.

Maxillary bone with an toothless space in front, extending beyond the palatine bone, with 6-8 teeth followed after a short interval by 2 enlarged grooved teeth; mandibular teeth subequal; eye very small with vertical pupil; body rather stout, cylindrical; head not distinct from neck, covered with large shields, nasal shield is separated by the single internasal, nasal cleft extends up to the prefrontal shield; supralabials 5, the 3rd touching the eye; scales smooth, in 25-29 rows at mid-body; ventrals are broad, well developed, not keeled; tail is short, subcaudal are paired. The genus includes a single species.

#### 257. *Fordonia leucobalia* (Schlegel 1837) (Text fig. 144)

1837. *Homolopsis leucobalia* Schlegel, *Phys, Serp.*, 2 : 345, pl. 13, figs. 8 & 9 (Timor; Leyden).

1943. *Fordonia leucobalia*, Smith, *Fauna Brit. Ind.*, 3 : 396.



**Fig. 144.** Maxilla and palato-maxillary arch of *Fordonia leucobalia*.

The maximum length in males 680 mm, tail 100 mm, and in females 940 mm, tail 125 mm. The colour is most variable. The variety unicolour, found in oriental region, is greyish or brownish on dorsum, uniform or with small black spots in the juveniles; ventrum is whitish with a yellow tinge. Nostril is pierced in a distinct nasal shield; frontal shield is much broader than the supraocular; rarely a small loreal scale is present; Preocular 1; Postoculars 1 or 2; Temporal 1 or 2, irregular in shape and size; supralabials 5, the 3rd touching the eye, 5th is longest; 2 pairs of genials are available, subquadrangular in shape, the anterior one in contact with 3-4 labials; scales in 25-27 rows in the specimens from the Oriental Region; ventrals 138-156; the last 1-2 often divided; subcaudals 26-43; anal 2. Hemipenils is not known.

*Distribution* : India : Tidal rivers and coasts of Bengal (Sunderbans); Nicobar Islands.

*Elsewhere* : Bangladesh (Sundarbans); Myanmar (Burma); Cochin China; The Indo-Australian Archipelago to N. Australia; Java (Cheribon on the north coast of Java).

*Habits and habitat* : It inhabits the holes of crabs, which comprise a major part of its food in Java. (Kopstein, 1931).

*Status* : Fairly common in many parts of its range.

#### Genus 64. *Cantoria* Girard 1857

1857. *Cantoria* Girard, *Proc. Acad. Nat. Sci. Philad.*, : 182.

1943. *Cantoria*, Smith, *Fauna Brit. Ind.*, 3 : 397.

Maxillary bone projects beyond the palatine, with 9-11 teeth, followed after an interval by a pair of enlarged grooved fangs; anterior mandibular teeth are longest, eyes are small with vertical pupil. Body compressed, elongated. Head depressed, not distinct from the neck, with large shields. Nasals separated by a single internasal. Nasal cleft absent in the species, *C. violacea*, found in the Indian subcontinent; but present in the other species, *C. annulata*. Loreal present, scales smooth, in 19 or 21 rows at mid-body. Ventrals smooth, narrow, not quite three times the width of the adjacent scales of the dorsal row. Anal divided.

*Range* : Two species are known : *C. violacea* Girard from Burma, Malaya, Sumatra, Borneo and Timor; and *C. annulata* (Jong) from West New Guinea. They are differentiated as follows (Ko Ko Gyi, 1970, pp. 182-183).

*C. violacea* : 19 scale rows at mid-body; prefrontals broadly in contact; two yellow cross bars on the head.

*C. annulata* : 21 scale-rows at mid-body; internasals, prefrontals and frontal meeting in a point in the middle of the snout; three yellow cross-bars on the head.

258. *Cantoria violacea* (Girard 1857)  
(Text fig. 145)

1857. *Cantoria violacea* Girard, *Proc. Acad. Nat. Sci. Philad.*, : 182.

1943. *Cantoria violacea*, Smith, *Fauna Brit. Ind.*, 3 : 398.

The maximum length as recorded in females reaches up to 1200 mm, tail 140 mm. The colouration is, body dull yellow; tip of the snout bluish black, followed by a narrow yellow cross-bar anterior to the eye, behind which is a bluish black cross-bar, an interrupted yellow cross-bar, and another black crossbar. On the body, 49-60 yellow cross-bars, some of which are confluent. On the tail 12-18 black rings, occasionally fused above and below. Throat and venter yellow with faint black bands corresponding to the dorsal bands. There is another color phase which is dark brown above, with narrow white cross-bars; the outer rows of scales and belly are white; the head has white spots" (Ko Ko Gyi, 1970, p. 185). Nostril is pierced in nasal; frontal is much broader than the supraocular; parietals are elongate; loreal well separated from the internasal; preocular 1; postocular 1; subocular 1; one long anterior temporal; supralabials 5, the 3rd and 4th below the eye, but both not touching it, last two supralabials are largest; 2 pairs of genials in contact with one another; the anterior pair is larger, in contact with 4 labials; dorsal scales subequal; ventrals 260-291, a little more than half the breadth of the body; subcaudals 52-69; anal 2. A specimen from Ross Islands in the Andamans has 244 ventrals and 69 caudals. Hemipenis is not known.

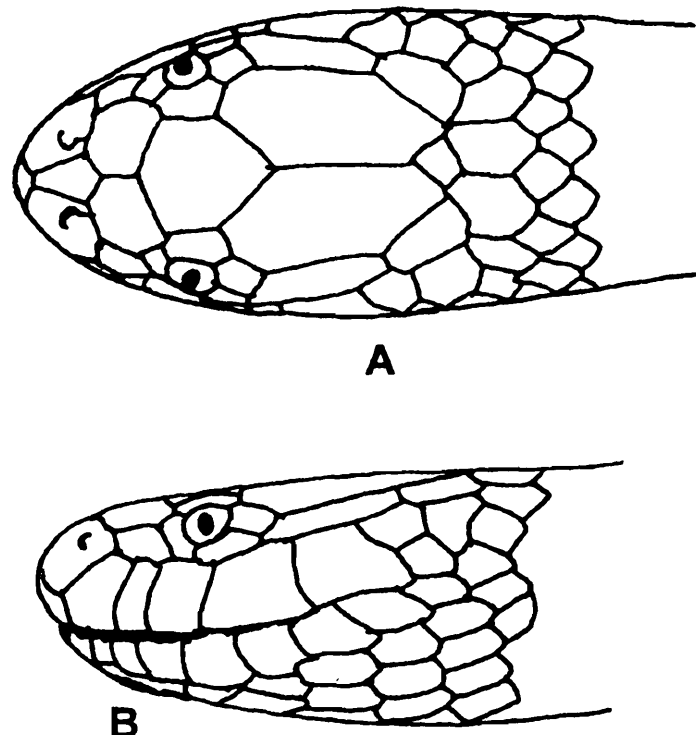


Fig. 145. *Cantoria violacea* (Girard). Head : A. Dorsal view, B. Lateral view.

*Distribution* : As given in the genus. *C. violacea* has been reported from the Andamans, but is not indigenous. (Smith, 1941, p. 156).

*Status* : A common snake in throughout its range.

#### Genus 65. *Bitia* Gray 1840

1840. *Bitia* Gray, *Syn. Cont. Brit. Mus.*, ed 42 : 42 (nom. nud.), and *Zool. Misc.* 1842, p. 64 (type *hydroides*).

1943. *Bitia*, Smith, *Fauna Brit. Ind.*, 3 : 399.

Body cylindrical. Head, neck, and anterior third of the body narrow, the latter gradually becoming larger towards the vent. Head scarcely distinct from the neck, with small shields. Nasals separated by a single internasal; anal cleft transversely dividing the nasal shield into an anterior and a posterior part. Parietals fragmented. Loreal present. Scales smooth, in 37-43 rows at mid-body. Ventrals narrow, about half as broad as the body, with two strong lateral keels. Tail short, feebly compressed, with paired subcaudals.

A single species.

#### 259. *Bitia hydroides* Gray 1842

(Text fig. 146)

1842. *Bitia hydroides* Gray, *Zool. Misc.*, : 64 and *Cat. Sim. Brit. Mus.* 1849, : 63 (type locality unknown; London).

1984. *Bitia hydroides*, Mahendra, *Ann. Zool.*, 22 : 130.

The maximum recorded length in females reaches up to 450 mm, tail 350 mm. Dorsal colour is pale brownish or greyish yellow, with blackish crossbars; pale yellow below. Head dark brown or grey, with one or two small dark brown circular spots on each shield. Wall and Evans (1900) described it in life as having "alternate yellow and black dorsal bars, the belly buff. The colours on the back are bright and the scales glazed like enamel."

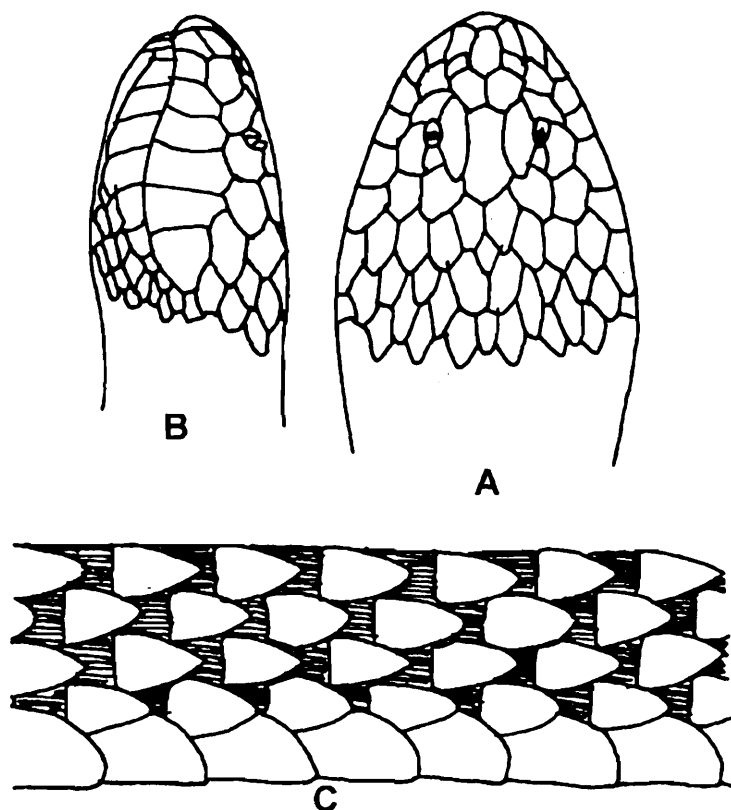
Characters as in the genus.

Supralabials 7. Ventrals 157-172. Subcaudals: male, 31-35; female, 21-27.

In its small head, narrow anterior third of the body, narrow ventrals and subcaudals, and compressed tail *Bitia hydroides* shows a resemblance to the snakes of the family Hydrophidae (Ko Ko Gyi, 1970, p. 189).

*Distribution* : Coasts and tidal rivers of southern Myanmar, Malaya Peninsula and Thailand.

*Habits and habitat* : Two females obtained in September by Wall & Evans contained three and four fully formed embryos respectively.



**Fig. 146.** *Bitia hydroides*, A. Dorsal view of head, B. Lateral view of head, C. Dorsolateral body scales.

*Status* : A common snake throughout its range.

Maxilla edentulous except for two minute teeth, followed by two small grooved fangs. Palatine with a few minute teeth in the middle, edentulous in front and behind. Mandible edentulous in front, followed by a series of 8-12 minute teeth; with a loose articulation between the dentary and the compound bone. Hypapophyses of the anterior vertebrae enlarged, especially modified—some of them with bosses separated from the centra by constrictions (Gans and Williams, 1954, p. 12), and others projecting through longitudinal slits into the oesophagus (Smith, 1943, pp. 403-404). Nasal shield with a pit in its posterior part. Sublinguals present, closely joined together without a median groove, so that “expansion of the chin region can only take place along the angle of the mouth” during ingestion. This expansion “is made possible by the presence of the extremely distensible skin between the scales of this region” (Gans and Williams, 1954, p. 7). Vertebral scales enlarged. A single genus with a single species.

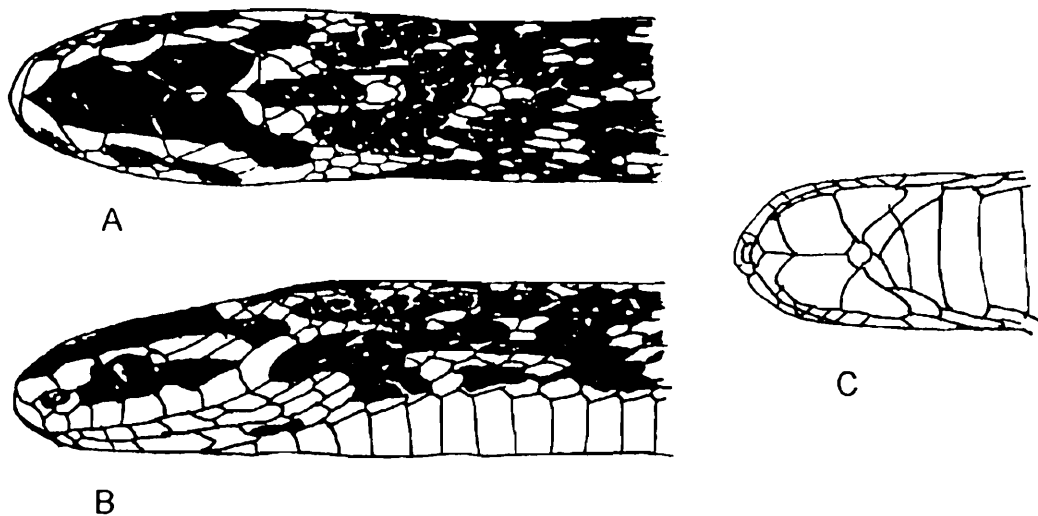
#### INDIAN EGG EATER

#### 260. *Elachistodon westermanni* Reinhardt 1863

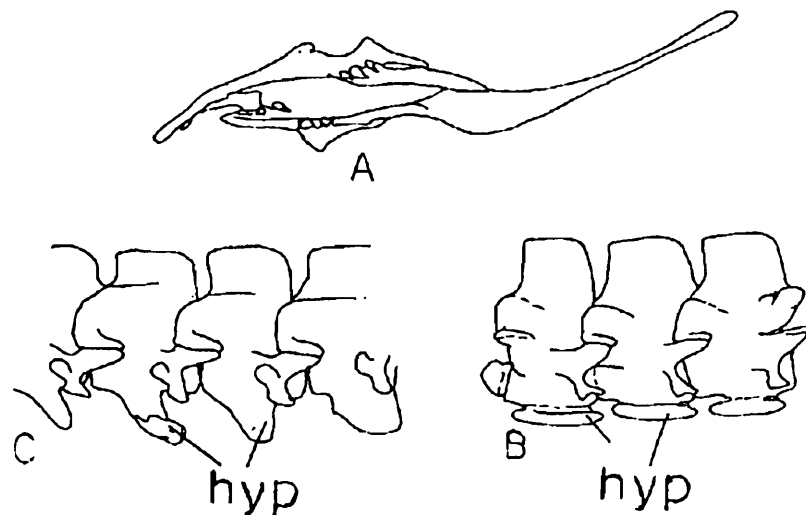
(Text figs. 147 & 148)

1863. Reinhardt, Oversigt. K. Danske Vidensk. Selskab., : 198-210.

1943. *Elachistodon westermanni*, Smith, *Fauna Brit. Ind.*, 3 : 404.



**Fig. 147.** *Elachistodon westermanni* Reinhardt. A. Dorsal pattern of head and neck, B. Lateral pattern of head and neck, C. Ventral view of head.



**Fig. 148.** *Elachistodon westermanni*, A. Palato-maxillary arch, B. Anterior, and C. Posterior thoracic vertebrae, showing hypapophysial enlargements hyp., hypapophyses.

Total length a of female is 800 mm, tail 130 mm. Color is dark olive-brown to blackish above, the vertebral scales yellowish white, except at their outer margins forming a light vertebral stripe extending the whole length of the body; sides spotted or flecked with the same color; whitish below the outer margins of the ventrals and adjacent row of scales edged with brown; a yellow stripe along the top of the head from the snout to the angle of the mouth, passing above the eye; an angular bar or spot on the nape; lips yellow." (Smith 1943, pp. 404-405). Body moderately elongate, feebly compressed; head somewhat distinct from the neck; tail short, with paired subcaudals; eye large, with vertically elliptic pupils nasal shield is large, with a large pit in its posterior part; internasals almost as large as the prefrontals; postoculars 2; anterior temporals two, long; supralabials 6 or 7, the 3rd and 4th touching the eye;

sublinguals 2 pairs; scales smooth, in 15 rows at mid-body, 19 rows on neck; vertebral series much enlarged; ventrals 208-217; subcaudals 59-65; anal single.

*Habits and habitat* : Not known. "With the exception of Reinhardt's specimen which had egg yolk (?) in its stomach, no other observations on stomach contents have been published. The consensus of the literature (based on no direct evidence) is that the form eats 'eggs but not exclusively.' The presence of grooved teeth and the nasal pit suggest that the species may feed also on live and homoiothermous prey." (Gana and Williams, 1954, p. 13).

Believed to be oviparous, because the type specimen was a gravid female, containing 7 eggs of 40 × 11 mm. size, with a relatively heavy shell.

*Remarks* : Boulenger (1896, p. 263) erected a separate subfamily of the *Colubridae*, *Elashistodontinae*, to accommodate it, but Malcolm Smith (1943, p. 403) included it, together with the genus *Dasypeltis* of the African egg-eating snakes, in the family *Dasypeltidae*. The basic differences between these genera, however, seem to justify Boulenger's views.

*Distribution* : Bihar (Purnea); West Bengal (Jalpaiguri, Calcutta).

*Elsewhere* : Bangladesh (Rangpur, Dacca).

*Status* : A rare snake, only 5 specimens are known.

#### Family IX. ELAPIDAE Boie 1827

##### PROTEROGLYPHA

1827. *Elapidae* Boie, *Isis*, : 610.

1943. *Elapidae*, Smith, *Fauna Brit, Ind.*, 3 : 406.

1966. *Elapidae*, Minton, *Bull. Am. Nat. Hist.*, 134 : 152.

This most important family of terrestrial and arboreal poisonous snakes comprise about 41 genera and 183 species distributed in whole world excluding the New Zealand and Madagascar. Elapid snakes are well distributed in all the tropical and subtropical countries of the world. They are well established in Australia, as majority of snakes available in this region, belong to this family. During recent times family *Elapidae* is missing in Europe but its Miocene and Pliocene fossils have been recovered from France (Hoffstetter, 1939). About 4 genera i.e. *Bungarus*, *Naja*, *Ophiophagus* and *Callophis* inhabit India and adjoining countries. Like *Hydrophiidae*, the *Elapidae* includes snakes with proteroglyphous condition of teeth (the poison fangs are situated at the anterior tip of the maxilla). The family includes Cobras. King Cobra Kraits, Mambas and Coral snakes. The main characters are : the snakes with long, slender, cylindrical body; the head may or may not distinct from the neck; the tail is quite

long, cylindrical and tapering to a point; the dorsal body scales are comparatively small; rhomboidal, overlapping ventrals are transversely enlarged to form a single row; eyes are shining and relatively large; teeth are recurved, pointed; maxilla is short, bears teeth, teeth are present on pterygoid and palatine also; the anterior maxillary tooth has been transformed into a large erect poison fang, connected with poison gland; coronoid bone is not present in the mandible; maxilla is loosely connected with the ectoptergoid; ectoptergoid extends posteriorly above the pterygoid, which usually reaches to the quadrate; vestiges of pelvis are available; the anterior skeletal elements are flexibly movable in cranium; premaxilla and maxilla are not united; prefrontal and nasal are not united; supratemporal moves freely on the cranium; quadrate is long and slants backwards to increase the gape of the jaws.

### Key to the Genera of Family *Elapidae*

- I. Scales disposed obliquely, particularly on the neck, which has more scale-rows than the mid-body and is distensible into a hood; 3rd supralabial touch the eye and the posterior nasal; subcaudals paired except the basal ones in ..... *Ophiophagus*
  - A. Scales in 19-27 rows at mid-body, occipital shields not present..... *Naja*
  - B. Scales in 15 rows at mid-body; a pair of large occipital shields is available ..... *Ophiophagus*
- II. Scales not obliquely disposed, in the same number of rows throughout the body.
  - A. Subcaudals all or most of them are single; vertebral rows of scales strongly enlarged except in *lividus*; 3rd supralabial not touching the posterior nasal .... *Bungarus*
  - B. Subcaudals paired; vertebral scales not enlarged; 3rd supralabial touching the nasal or/and the nasal suture meeting 2nd supralabial ..... *Callophis*

### Genus 67. *Bungarus* Daudin 1803

#### KRAITS

1803. *Bungarus* Daudin, *Mag. Encycl., An.*, 8(5) : 434, based on Russell's "*Bungarum pamab*" 1, 1796, : 3, pl. 3 (type *fasciatus*).
1943. *Bungarus*, Smith, *Fauna Brit. Ind.*, 3 : 407.
1966. *Bungarus*, Minton, *Bull. Am. Mus. Nat. Hist.*, 134 : 152.

This genus includes the snakes with following characters : Head not distinct from neck; head shields are normal; loreal shield is not available; eyes are moderately large or small, with round pupil; maxillary bone never extends, beyond the palatine;

poison fangs, which are fixed, hollow maxillary teeth are followed by 2-4 small solid teeth; body scales are smooth, in 13-19 rows; vertebral row of scales are moderately enlarged in most of the species, but it is strongly enlarged in *lividis*; tail is moderately long, subcaudal scales are single or many of them divided; dorsal vertebrae are with strong lateral expansion, which are connected with the pre- and post-zygapophysis. About 12 species have been reported from Indonesia to Taiwan and in southern Asia, southern China, Pakistan and India.

### Key to the species of the Genus *Bungarus*

- I. Terminal subcaudal paired, the others either paired or single.
  - A. Scales in 13 rows ..... *flaviceps*
  - B. Scales in 15 rows ..... *bungaroides*
- II. All subcaudals single.
  - A. Tail blunt, ending obtusely finger like; a prominent ridge down the back and tail; back with alternate bands of black and yellow. .... *fasciatus*
  - B. Tail ending in a point; no ridge down the back.
    - a. 2nd supralabial as broad as the 3rd, back with narrow white cross-bars arranged more or less distinctly in pairs, most distinct posteriorly; scales in 15 or 17 rows throughout, rarely in 17 : 19 : 17 rows ..... *caeruleus*
    - b. 2nd supralabial decidedly narrower than the third.
      1. Uniform black above; scales in 15 rows throughout.
        - i. Vertebral scales narrow, not or feebly enlarged, longer than broad, shaped like the adjacent scales in the middle of the body; subcaudals 35-43 ..... *lividus*
        - ii. Vertebral scales strongly enlarged, broader than long in the middle of the body; subcaudals 47-57 ..... *niger*
      2. Not uniform black above; back with cross-bars.
        - i. Scales in 19 or 17 rows at mid-body; body compressed ..... *waill*
        - ii. Scales in 15 rows throughout; body not compressed.
 

Back with 11-14 very broad, white, black-spotted cross-bars, tail with 2-3; belly uniformly white ..... *magnimaculatus*

Back with alternating black and white bands; belly with black marks or cross-bars, sometimes absent in the juvenile ..... *ceylonicus*

Back with 27-48 white cross-bars; tail with 9-13; belly uniformly white .....  
 ..... *multicinctus*

## ASSAM BLACK KRAIT

261. *Bungarus bungaroides* (Cantor 1839)

1839. *Elaps bungaroides* Cantor, *P.Z.S.*, **33** (Cherra pungi, Khasi Hills; London : Col. Sketch in Boddeian Library, no. 4).

1943. *Bungarus bungaroides*, Smith, *Fauna Brit. Ind.*, **3** : 410.

Total length in male 1400 mm, tail 160 mm; female 1000 mm, tail 130 mm. Color is black or very dark brown above, with white or pale yellowish linear cross-bars, the anterior ones angular and pointing forward. Below, the linear cross-bands wider, forming broad bands across the belly. A white line across the snout, and a curved one on each side from the postocular to the lip. In the adult the head markings are sometimes very indistinct. Scales in 15 rows throughout. Ventrals 220-238. Subcaudals 43-51, tail paired, or a few of the anterior ones single.

*Distribution* : India : Eastern Himalayas (Darjeeling district; Sikkim); Assam (Khasi Hills); Cachar.

*Elsewhere* : Upper Myanmar (Burma).

*Status* : A rare snake.

## YELLOW-HEADED KRAIT

262. *Bungarus flaviceps* Reinhardt 1843

1843. *Bungarus flaviceps* Reinhardt, *Vidensk. Sebk. Skrijt.*, **x** : 267, pl. iii, fig. 4 (Java).

1984. *Bungarus flaviceps*, Mahendra, *Ann. Zool.*, **22** : 317.

The maximum length in male reaches up to 1850 mm; tail 220 mm. The colour of back and posterior portion of the nape is black, generally with an orange-yellow vertebral stripe. An orange-yellow longitudinal stripe on scale-rows 1 and 2, which is always distinct in the young. Head and part of the nape orange-yellow. Tail and usually the posterior part of the body orange or yellow. Lower parts orange or yellow, uniform or with the shields edged with brown.

Scales in 13 rows throughout. A distinct ridge down the back and tail, formed by the spinous processes of the vertebrae. Ventrals : Male 220-236; female 193-217. subdaudals 42-55, anterior ones single, the terminal ones are paired. Hemipenis extends up to the 6th-9th caudal plate; the distal one-third or half is calyculate, the remainder part is spinose. The calyces are smallest near the tip of the organ and increase in size as they approach the spinose area. Each cup is stiff-ended by spine-like structures which, like the ribs of an umbrella, hold the membrane and project beyond its margin. There is fairly abrupt transition from the calyculate to the spinose area; the largest spines are present quite near to the calyces and they are thick and papilla-like in form, and bear a small sharp spine at the tip. The bifurcation of the sulcus is at about the middle of the calyculate area or the junction of the calyculate and spinose areas, and the lips of the sulcus within the spinose area are quite smooth

in these species. (while in other Kraits the lips of the sulcus are be set with small spines throughout.

*Distribution* : Myanmar (Tenasserim); Malaysia (peninsula as well as Archipelago); Thailand (Ratburi district); Cochin-China.

*Status* : Available but not in abundance.

#### BANDED KRAIT

##### 263. *Bungarus fasciatus* (Schneider 1801)

1801. *Pseudoboa fasciata* Schneider, *Hist. Amph.*, 2 : 283 (based on Russells' desc. and fig).

1943. *Bungarus fasciatus*, Smith, *Fauna Brit. Ind.*, 3 : 411.

The maximum length reaches up to 1800 mm, tail 150 mm, largest reached so far is 2125 mm. This snake is alternately banded with black or purplish black and yellow or buff, the bands being broad and subequal. Head and nape with a large black mark bordered by yellow. Scales in 15 rows throughout. Back and tail with a prominent ridge along the spine. Tail ending blunty, usually more or less swollen at the tip; ventrals 200-236; subcaudals 23-39.

*Distribution* : India : North-east India (Complete basin of Brahmaputra), south of Himalayas; Andhra Pradesh (Hyderabad, Kinner, 1913 Godavari valley); Orissa (Mahanadi valley), Bihar; Uttar Pradesh (Oudh, Stone, 1922); West Bengal (northern part).

*Elsewhere* : The complete Indo-Chinese subregion; Malaya Peninsula and Archipelago; Southern China; Myanmar (Tenasserim, complete basin of Irrawaddy); Thailand.

*Habit and habitat* : This snake inhabits the plains and open country, often in the vicinity of human habitations. Recorded up to 5000 feet altitude in Myanmar. It is a most docile and gentle snake; if provoked it throws its body in to a loose coil and hides its head away beneath some part of it. The food mainly consists of snakes of all kind (harmless or poisonous), small mammals, lizards, frogs, toads and fish (if available). It is oviparous and lays from 8-11 eggs in a clutch, which are deposited in holes in ground, or under leaves and are guarded constantly by both the parents; the breeding season is from August to March. Eggs measure 25 × 15 mm., in size and hatchlings 320-340 mm., in length (Col. Evans 1905).

*Status* : A common snake in throughout its range.

#### COMMON INDIAN KRAIT

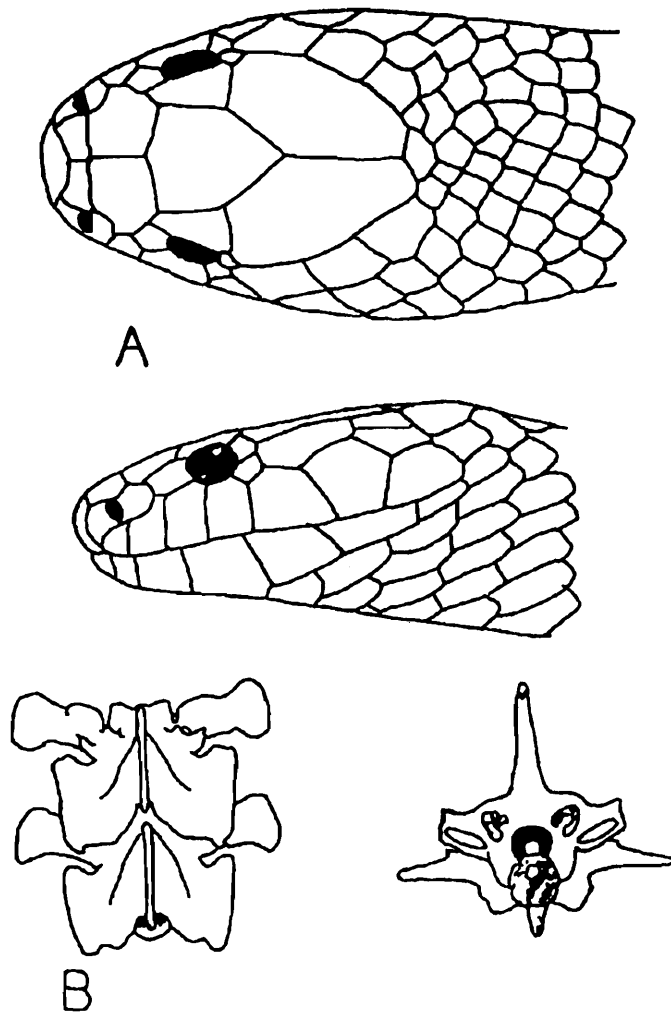
##### 264. *Bungarus caeruleus* (Schneider 1801)

(Text fig. 149)

The maximum recorded length of Krait is 1500 mm, body is cylindrical, slightly tapers anteriorly; head is not distinct from the neck, it is flat with a blunt snout.

Scales round the body are in 15 or 17 rows; ventral shields are from 194-234; subcaudal shields are 42-52; the hemipenis extends upto the 6th-9th caudal plate; the distal one-third or half is calyculate, the remainder portion of the penis is with spines; the calyces are smallest near the tip of the penis and increase in size and they approach the spine bearing area; each cup is with stiff ends; the bifurcation of the sulcus is almost at the middle of the calyculate area or the junction of the calyculate and spinose areas and the lips of the sulcus are always with the small spines, which are distributed uniformly in the complete area. Dorsal coloration is jet black to dark-brown, with a series of 3-9 vertebral spots on neck and anterior most part of the body followed by 38-56 narrow, transverse bands or spots, generally in pairs; upper labials are yellowish or whitish; ventrum is whitish.

*Distribution* : India : Gujarat (Gandhinagar, Bhavnagar, Dangs, Mehsana, Panchmahals and Bharuch district); West Bengal, Peninsular India, Rajasthan, Punjab, Haryana, Uttar Pradesh, Madhya Pradesh, Orissa, Maharashtra, Andhra Pradesh, Karnataka, Tamil Nadu and Kerala.



**Fig. 149.** A. Dorsal and lateral views of head of *Bungarus caeruleus*, B. Dorsal and hind views of vertebrae of *Bungarus fasciatus*.

*Elsewhere* : Sri Lanka; Pakistan.

*Habits and habitat* : Strongly nocturnal snake confined to grassland; semi arid areas with alluvial soils; rocky areas, marshes and gardens. The breeding season is from April to July. The main food of Kraits include the snakes; small mammals, frogs, toads, lizards and fish can also be taken if snakes are not available. They lay 6-10 eggs, which are deposited in holes in ground.

*Status* : Becoming rare on account of habitat loss.

#### CEYLON KRAIT, KARAWALA

##### 265. *Bungarus ceylonicus* Gunther 1864

1864. *Bungarus ceylonicus* Gunther, *Rept. Brit. Ind.*, : 344 (Ceylon : London).

1984. *Bungarus ceylonicus*, Mahendra, *Ann. Zool.*, **22** : 321.

The maximum length never exceeds 1000 mm; tail 95 mm. This is the smallest species among Kraits. Young at the time of birth measure 230-260 mm. Glistening black above, with 15-22 white cross-bars on the body and 2-5 on the tail. These are well defined in the young, but broken up into spots and often indistinct in the adult. Young with the head white, spotted with black. Belly uniform white in the juvenile, banded black and white in the adult.

Vertebral scales unusually large, considerably broader than long. The 2nd supralabials distinctly narrower than the 3rd. Scales in 15 rows throughout. Ventrals 219-243. Subcaudals 32-42.

*Distribution* : Peculiar to Ceylon, where it is common in hilly districts, usually at altitudes below 3,000 feet.

*Status* : Available but not in abundance.

#### ANDAMAN KRAIT

##### 266. *Bungarus andamanensis* Biswas & Sanyal 1977

(Text fig. 150)

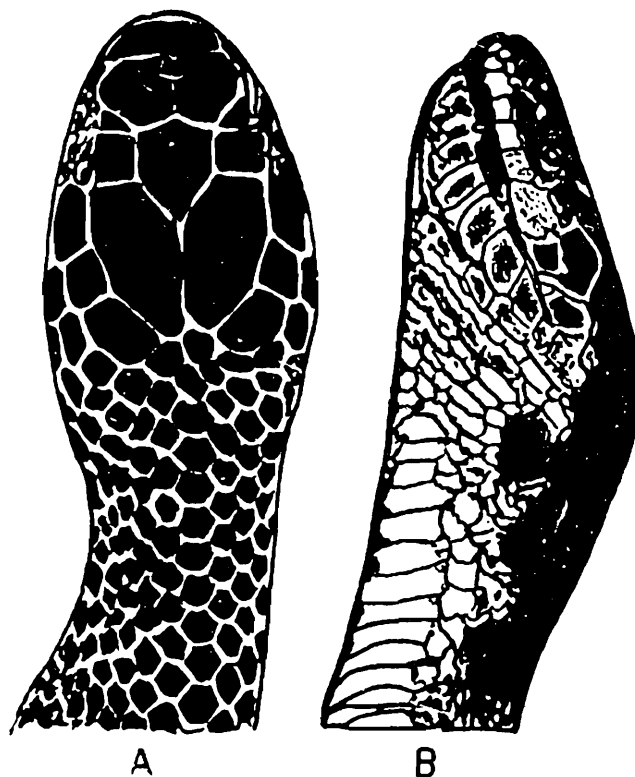
1878. *Bungarus andamanensis* Biswas & Sanyal, *J. Bombay nat. Hist. Soc.*, **75**(1) : 179-183.

Like *B. caeruleus* in general head scalation but differs in the following characters : Body scales are in 15 rows throughout; ventrals 192-200; subcaudals 40-46. It differs in general body coloration also by having a complete black dorsum, with narrow white equidistant cross-bars, 40-46 in number on the body which are quite distinct throughout and have no vertebral spots.

The length of the body and tail is like *caeruleus*.

*Distribution* : India : Andaman Islands.

*Status* : Rare species, known by types and six other examples.



**Fig. 150.** *Bungarus andamanensis* Biswas and Sanyal, Head : A. Dorsal pattern, B. Lateral pattern.

#### MANY-BANDED KRAIT

##### 267. *Bungarus multicinctus* Blyth 1861

1861. *Bungarus multicinctus* Blyth, *J.A.S. Bengal*, **xxix** : 98 (Amoy : type lost).

1984. *Bungarus multicinctus*, Mahendra, *Ann. Zool.*, **22** : 321.

The maximum length never exceeds 1100 mm, tail 145 mm. The dorsum is black or with a bluish tinge, with 24-48 white cross-bars on the body and 6-13 on the tail. The median portion of each bar may be spotted with black. Head is dark brown or black, in rare specimens entirely or partially white. Upper lips and ventrum white. Tail below, mottled and marked with dark brown. The 2nd supralabial is narrower than the 3rd. Scales in 15 rows throughout. Ventrals 194-228. Subcaudals 44-54.

*Distribution* : Myanmar (Fornt Hertz, Myaungina, Maymyo, Toungoo, Rangoon, Pegu); India (the Andaman Islands); Hainan; Hong Kong, Taiwan (Formosa) and Southern China.

*Status* : Available, but not common.

##### 268. *Bungarus magnimaculatus* Wall & Evans 1900

1901. *Bungarus caeruleus* var. *magnimaculatus* Wall & Evans, *J. Bombay N.H.S.*, **xiii** : 611 (Meiktila, Upper Burma : London).

1984. *Bungarus magnimaculatus*, Mahendra, *Ann. Zool.*, **22** : 321.

Total length : 1300 mm; tail 1500 mm.

Colour is black or bluish-black above with 11-14 very broad light cross-bars, which are as broad as, or broader than their interspaces. The cross-bars are white, streaked with black lines. A white preocular spot more or less distinct. Belly quite white.

The 2nd supralabial distinctly narrower than the 3rd. Scales in 15 rows throughout. Ventrals 213-235. Subcaudals 40-49. Hemipenis is not known.

*Distribution* : Myanmar (Meiktila, Mongwa, Hmawbi, Myingyan, Shwebo, Minba, Pyawhwe).

*Status* : A common snake.

#### BLACK KRAIT

##### 269. *Bungarus niger* Wall 1908

1908. *Bungarus niger* Wall, *J. Bombay N.H.S.*, **18** : 715 (Tindharia, E. Himalayas; London).

1943. *Bungarus niger*, Smith, *Fauna Brit. Ind.*, **3** : 417.

The maximum length as recorded is 1200 mm, tail 135 mm. The colour is as available in *B. lividus*. Scales in 15 rows throughout. Vertebral scales enlarged, broader than long in the middle of the body. Ventrals 216-231. Subcaudals 47-57. *Bungarus niger* and *B. lividus* differ only in the size of the vertebral scales and the number of subcaudals, and have been mistaken for each other even by accepted authorities (of, Sclater, 1891, p. 246, with Wall's footnote, 1928, p. 27 : and see also Malcolm A. Smith, 1943, p. 418).

*Distribution* : Eastern Himalayas (Darjeeling district, Tindharia); Assam (Dibrugarh, Sadiya, Sibsagar, and Garo Hills).

*Status* : A rare species.

#### LESSER BLACK KRAIT

##### 270. *Bungarus lividus* Cantor 1839

1839. *Bungarus lividus* Cantor, *P.Z.S.*, : 32 (Assam; Col. Sketch in Bodleian Library, no.1).

1943. *Bungarus lividus*, Smith, *Fauna Brit. Ind.*, **3** : 418.

Total length in male 1020 mm., tail 120 mm. Color is uniform black or bluish black above; white below with a more or less dark mottling at the base of the ventrals and subcaudals. Scales in 15 rows throughout, the vertebral scales not or but feebly enlarged, longer than broad in the middle of the body, like the adjacent scales. Ventrals 209-221. Subcaudals 35-43.

*Distribution* : India : West Bengal (Rangpore, Jalpaiguri and Darjeeling district); Assam (Dibrugarh); Eastern Himalayas (Tindharia).

*Status* : A rare snake.

## WALLS' KRAIT

271. *Bungarus walli* Wall 1907

1907. *Bungarus walli* Wall, *J. Bombay nat. Hist. Soc.*, **17** : 608, pl. (Fyzabad, U.P.; London).  
 1943. *Bungarus walli*, Smith, *Fauna Brit. Ind.*, **3** : 418.

Total length in male 1640 mm, tail 190 mm female 1500 mm, tail 190 mm. Color is bluish-black above, with 65-80 narrow white transverse bars, formed by series of small spots. No light preocular spot. Upper lip and lower parts white. Tail more or less plumbeous beneath, especially towards the tip, unlike that of *B. caeruleus*. Body distinctly compressed. Vertebral scales as broad as, or broader than long. The 2nd supralabials narrower than the 1st and the 3rd. Scales in 21, 19 or 17 : 19 or 17 : 17 rows. Ventrals 192-208. Subcaudals 46-55.

*Distribution* : India : Uttar-Pradesh (Fyzabad); West Bengal (Midnapore); Bihar (Purnea, Gaya).

*Status* : A rare snake.

Genus 68. *Coral snake Callophis* Gray 1834

1834. *Callophis* Gray, III. *Ind. Zool.*, **2**, pl. 86, fig. 1 (type *gracilis*).  
 1943. *Callophis*, Smith, *Fauna Brit. Ind.*, **3** : 418.

This genus includes the poisonous snakes popularly known as coral snakes, with cylindrical, elongated body, of almost equal diameter from head to anus; head not distinct from neck; head shields normal; loreal shield is not present; nostril is pierced between the two nasals; eyes are of small to moderate size, with round pupil : maxillary bone extends sufficiently beyond the palatine; poison fangs followed after an interval by from 0-5 small solid teeth; body scales are smooth, subequal, in 13 or 15 rows throughout; tail short, subcaudals are paired except in *Callophis maclellandi*. This genus is closely allied to *Bungarus*; more than 13 species are known from India; Vietnam, China, Japan and Philippines.

Boulenger (1896, p. 392) and Stejneger (1907, p. 387) recognised Peters' genus *Hemibungarus* as separate from *Calliophis* Gray on the basis that the former has 1-3 small maxillary teeth in addition to the poison fangs and the latter none. Malcolm A. Smith (1943, p. 419) found the distinction untenable and united the two genera.

*Habits* : Nocturnal; timid in disposition; "often found by day half buried in the earth beneath fallen timber, or among leaves. Their main food appears to be snakes" (Malcolm A. Smith, 1943. p. 419).

Key to the species of the Genus *Callophis*

- I. Prefrontal touching the 3rd supralabial; preocular present or absent.  
 A. Preocular absent; anal 1 ..... *bibroni*

- B. Preocular present, separated from the posterior nasal by the prefrontal; anals 2  
..... *beddomei*
- II. Prefrontal not in contact with any supralabial; anals 2.
- A. Supralabials 6 ..... *maculiceps*
- B. Supralabials 7
- a. Temporal shield long, touching 3 supralabials.
1. Ventrals 174-203; subcaudals 21-31 ..... *maculiceps*
2. Ventrals 234-259; subcaudals 30-44 ..... *nigrescens*
- b. Temporal shield touching 2 supralabials ..... *maccllellandi*

### SLENDER CORAL SNAKE

#### 272. *Callophis melanurus* (Shaw 1802)

1769. *Indian Serp., Russell., 1* : 12, pl. 8 (Nerva, Bengal).

1943. *Callophis melanurus*, Smith, *Fauna Brit. Ind., 3* : 420.

Apart from the characters given under the genus these small snakes of about 360 mm. length have 2 or 3 minute teeth behind the poison fangs; eyes are small; preocular shield is one, in contact with the nasal; postoculars are 2; temporal are 1+1; supralabials are 6, 3rd and 4th touching the eye; 5th and 6th touching the temporals; genials are in two pairs; infralabials are 3 or 4; infralabials are in contact with the anterior pair of genials; body scales are in 13 rows; ventral shield are in 249-277; subcaudal shields in males are 33-37, in females 24-27. In Sri Lanka example, ventral shields are 229-257; subcaudal shields 27-37; anal shield is divided in all the examples from India and Sri Lanka. Structure of hemipenis is not fully known but it extends up to 6th-8th caudal plate and sulcus not divided completely; the complete organ bears the spines, distributed uniformly and of equal size except those present near the extreme tip of the penis, which are smaller. Dorsal coloration is light brown, center of each scale speckled with brown and form resultant longitudinal lines on the complete dorsum; dorsal aspect of head and neck are black and are with yellow spots out of which a pair of spots is quite distinct on the occiput; tail is with 2 black rings, one at the base, the other near the tip; ventrum is yellowish with a red ringe.

*Distribution* : India : Gujarat (Valsad, Bhavnagar and Dangs districts). Maharashtra (Bombay, Dharwar district, Nagpur), Tamil Nadu (Coimbatore and Anaimalais), Kerala (Malabar), West Bengal (Nerva).

*Elsewhere* : Sri Lanka (Trincomalee, Matale, Tissamaharama, Balangoda).

*Habits and habitat* : It is a nocturnal, timid snake available in plains and foot-hills under leaf litre, fallen wooden logs, stones and loose forest soil. Their main food comprises the snakes of all type on whom it can overpower and swallow. This snake

exhibits the warning mimicry as on disturbance it curls its tail over its back and expose the red colour of the under side. Nothing is known about the breeding habits.

*Status* : This is rare snake and seems to be vulnerable on account of habitat loss.

### 273. *Callophis maculiceps* (Gunther 1858)

1858. *Elaps maculiceps* Gunther, *Cat. Sn. Brit. Mus.*, : 232 (E. Indies : London).

1984. *Callophis maculiceps*, Mahendra, *Ann. Zool.*, **22** : 325.

Total length : 480 mm; tail 33 mm.

Colour is yellowish, reddish or greyish brown above, with a series of small black dots on each side of the spine. Head and nape black, the colour interrupted by irregular yellow markings. Tail with two black bands one basal, the other subterminal. Belly coral pink.

Preocular 1, in contact with the posterior nasal. Postoculars 2. A single very long temporal shield, touching the 5th, 6th and 7th supralabials. Supralabials 7, the 3rd and 4th touching the eye. Scales in 13 rows throughout. Ventrals 174- 205. Subcaudals 20-32. Anal divided. Hemipenis extends up to the 10th caudal plate; sulcus not divided; the tip of the penis has a number of small longitudinal folds, the middle and proximal part have three much larger ones; there are no calyces or spines.

*Distribution* : Burma and Thailand, south to the Malay Peninsula; Cambodia; Cochin-China.

*Habits and habitat* : Feeds mainly the snakes.

*Status* : Available in sufficient number.

## STRIPED CORAL SNAKE

### 274. *Callophis nigrescens* Gunther 1862

1862. *Callophis nigrescens* Gunther, *Ann. Mag. Nat. Hist.*, (3)ix : 131 and *Rept. Brit. Ind.* 1864, : 351, pl 24, fig. F (India; London).

1943. *Callophis nigrescens*, Smith, *Fauna Brit. Ind.*, **3** : 422.

This most elongate species of all the Indian coral snakes reaches to a length of about 900 mm, with a circumference of about 25 mm, is quite similar to the melanurus but differs in the following characters : three or four teeth are present behind the poison fangs; a single very long temporal shield is present; supralabials are 7 in number, 3rd and 4th touching the eye, 5th, 6th and 7th touching temporal; ventral shields are 234-251; subcaudal shields are 35-44 in males and 32-36 in females; anal shield is divided; hemipenis is quite short reaching up to the sixth caudal plate, the complete organ bears spines which are uniform in size except those present near the extreme tip, where these are quite small; the major portion of the penis is divided into

two longitudinal folds. Dorsal coloration is blackish, with a white oblique bar on the nape; dorsum is with 5 black stripes; a white stripe emerges from behind the eye and reaches up to the angle of the mouth; a white streak extends from preocular to the labials; a white spot is present on parietal shield; ventrum is coral red.

*Distribution* : India : Gujarat : Dangs district (Saputara) Western Ghats (Nilgiri, Anaimalai, Shevaroy and other hilly areas), Panchgani, Endemic to India.

*Habits and habitat* : It is a forest hill species, available up to 2500 meters in above localities. It lives absolutely on snakes.

*Status* : A rare snake.

### 275. *Callophis beddomei* Smith 1943

1943. *Callophis beddomei* Malcolm A. Smith. *F. Brit. Ind.*, : 423.

Total length 565 mm, tail 65 mm. The color is light purplish-brown above, with irregularly shaped, black, white-edged spots. These are more or less regularly arranged in two vertebral series, separated from each other by a black vertebral line, or confluent with one another. Two lateral series of spots and intermediate ones of much smaller size. Whitish below. Prefrontal in contact with the 3rd supralabials, separating the preocular from the posterior nasal. Postoculars 2. A single very long temporal in contact with the 5th, 6th and 7th supralabials. Supralabials 7, the 3rd and 4th touching the eye. Scales in 13 rows throughout. Ventrals 212-221. Subcaudal 33-34.

*Distribution* : India : Shevaroy Hills, and Koppa, Mysore.

*Status* : Rare, known from 2 examples only.

### MACCLELLANDI CORAL SNAKE

### 276. *Callophis macclellandi* (Reinhardt 1844)

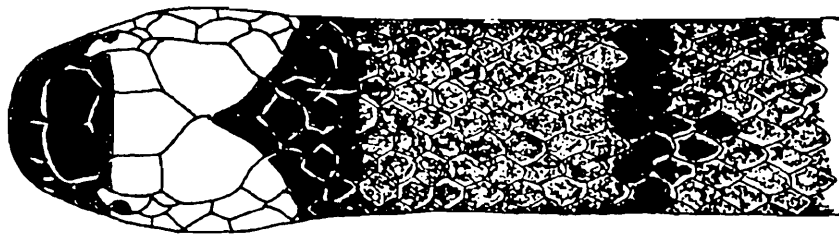
(Text fig. 151)

1844. *Elaps macclellandi* Reinhardt, *Calcutta J. Nat. Hist.*, 4 : 532 (Assam).

1943. *Callophis macclellandi*; Smith, *Fauna Brit. Ind.*, 3 : 423.

Total length in males 635 mm, tail 70 mm and in females 780 mm, tail 60 mm. (Wall 1928, p. 32) recognises five color varieties. In all of them the head is black above, except for a broad white transverse bar behind the eye, and the belly is pale or sulphur yellow, spotted or banded. In one variety, concolor, described from the Kachin Hills, Burma, the back is purplish-brown above, uniform or with 3 longitudinal series of small indistinct black spots, while in the other four it is pale or dark brownish with a reddish, greenish or bluish tint, with either black bands or a vertebral stripe or series of spots. In the *Forma typica*, which is widely distributed, see distribution, 16-26 narrow black bands completely or incompletely encircle the body, there being 3-4 such bands on the tail. In *univirgatus*, found in the eastern Himalayas (Nepal and the vicinity of Darjeeling)

there is a black streak running down the spine and 23-32 transverse bars on the sides of the body, the latter sometimes absent. In *gorei*, collected from Jeypore (Assam), the Naga Hills and Manipur, no vertebral stripe and black bars are present, but there are about 30 small black spots along the spine, in *nigriventer*, from Kasauli, a broad black stripe runs continuously along the middle of the body and there are three rings on the tail. Preocular 1, in contact with the posterior nasal. Postocular 2. Temporals 1+1, the anterior touching the 5th and 6th supralabials. Supralabials 7, the 3rd and 4th touching the eye. Scales in 13 rows throughout. Ventrals 182-244. Subcaudals 20-36, paired or rarely some of them unpaired. Anals 2. Hemipenis extends up to the 6-8th caudal plate, forked near the tip; complete organ bears spines and is calyculate; the spines are short, set on the margins of the calyces and of almost equal size, except near the tip, where they are smaller.



**Fig. 151.** *Callophis macclellandi* (Reinhardt). Dorsal pattern of head and neck.

**Distribution :** The *Forma typica* occurs from the Himalayas as far west as Kasauli, through Nepal, Sikkim, Assam and Burma to Southern China and Taiwan. Ranges of the other varieties as given under 'Color' above.

**Habits and habitat :** It is a hill species, found between 3000 to 6000 feet altitude with forests. It is a most docile snake and absolutely inoffensive. The main food comprises the snakes of all forms which it can overpower. The breeding season is from July to November and it lays 6-14 eggs in a single clutch. It is a most beautiful snake.

**Status :** Available in sufficient number in throughout the range.

#### CHERRY-RED CORAL SNAKE 277. *Callophis bibroni* (Jan 1858)

1858. *Elaps bibroni* Jan, *Rev. & Mag. Zool.*, **10** : 526. Prodr. pl. B, 1859 (India; Paris).

1943. *Callophis bibroni*, Smith, *Fauna Brit. Ind.*, **3** : 425.

The maximum length in female is 660 mm, tail 55 mm. Wall records one 775 mm in length. The color of dorsum is cherry-red to dark purplish-brown, with black transverse bands which are sometimes continuous across the belly. Coral-red beneath; head above, black in front, red posteriorly. Eyes are quite small; prefrontal shield is in contact with the eye and the third supralabial; preocular shield is not present; postocular 1; a single very long temporal is present, touching the 5th, 6th and 7th

supralabials; supralabials 7, the 3rd and 4th touch the eye; body scales in 13 rows; ventrals 219-228; subcaudals 25-39, divided throughout; anal 1. Hemipenis extends up to the 7th caudal plate; complete organ bears spines; the spines are smaller at the tip of the penis and gradually increase in size as they reach the proximal end of organ.

*Distribution* : India : Western Ghats as far north as Coorg.

*Status* : Available but not in abundance.

### Genus 69. *Naja* Laurenti 1766

#### COBRAS

1766. *Naja* Laurenti, *Syn. Rept.*, : 90 (type *Coluber naja* Linnaeus).

1943. *Naja*, Smith, *Fauna Brit. Ind.*, **3** : 426.

196. *Naja*, Smith, *Bull. Am. Mus. Nat. Hist.*, **134** : 153.

The genus includes deadly poisonous snakes with anterior ribs elongated, neck can be expanded into a hood; maxillary bone extends beyond the palatine on the anterior aspect; maxilla is either having fangs only or if present they are followed one to three small solid teeth; body scales are smooth, rows are arranged in an oblique fashion, particularly in the anterior half portion of the body; nostrils are large, situated between the nasals; loreal scale is not present; subcaudal shield are divided. More than 12 species inhabit the oriental region; about 6 species are distributed in almost complete Africa, Asia (from southern China to Transcaspia through Pakistan and India); major islands from Taiwan to Java. One species *Naja naja* occurs in India.

#### INDIAN COBRA

278a. *Naja naja naja* (Linnaeus 1758)

(Text figs. 152-155, 157-159)

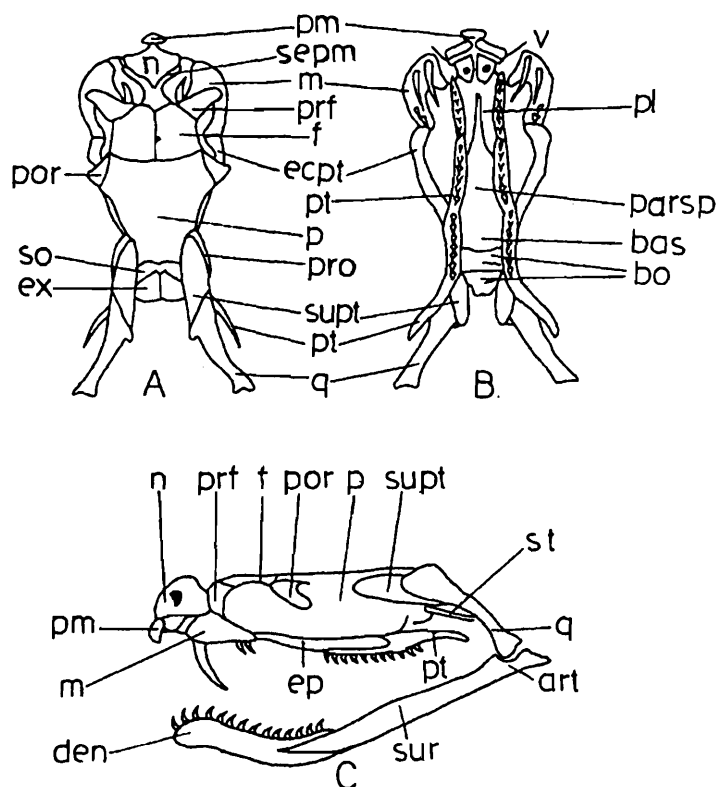
1758. *Coluber naja*, Linnaeus, *Syst. Nat.*, : 221.

1943. *Naja naja naja*, Smith, *Fauna Brit. Ind.*, **3** : 427.

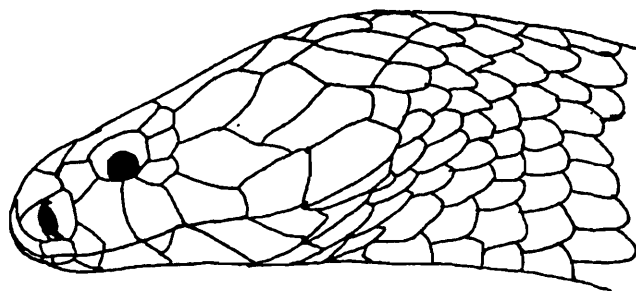
1966. *Naja naja naja*, Minton, *Bul. Am. Mus. Nat. Hist.*, **134** : 153-154.

This subcylindrical posteriorly, dorsoventrally flattened (anteriorly) deadly poisonous snake reaches to a maximum length of 1211-1515 mm in males and 1294-1515 mm in females. Head is quite wide, expended and heavy and slightly distinct from the neck; rostral shield is well developed and quite wide; eyes are moderately large with round pupil; a single minute tooth is present on maxilla behind the fangs; preoculars are one or two postoculars are 3; temporals are 2+3 or 2+4, supralabials are 7, third one is the largest, touching the eye and the nostril (nasal shield), sometimes it is separated from eye by a second preocular; fourth supralabial is also touching the eye; infralabials are generally 8, in some individuals these may be 7 or 9; in many

individuals a small triangular shield is present between 5th and 6th infralabials at oral margin; anterior and posterior chin shields are almost equal, posterior chin shields do not touch each other; scales, are 25-35 across the neck, 21-25 at the middle of the body, 17 or 15 in front of the vent; ventral shields are 176-200; subcaudal shields are 48-75. Hemipenis reaches up to the 10th caudal plate, forked, proximal part with minute spines; distal area is calyculate; cups are poorly developed; the median area of the hemipenis is interrupted by a narrow, transverse, smooth area not intercepting sulcus or its adjacent longitudinal ridges. Dorsal coloration is uniformly



**Fig. 152.** Skull : *Naja naja*, Cobra. A. Dorsal view, B. Ventral view, C. Lateral view art., articular; bas., basisphenoid; bo., basioccipital; den., dentary; ecpt., ectopterygoid; ep., ectopterygoid; ex., exoccipital; f., frontal; m., maxilla; n., nasal; p., parietal; parsp., parasphenoid; pl., palatine; pm., premaxilla; por., postorbital; prf., prefrontal; pro., prootic; pt., pterygoid; q., quadrate; sept., septomaxilla; st., stapes; supt., supratemporal or tabular; sur., surangular; v., vomer.



**Fig. 153.** *Naja naja naja* (Linnaeus). Head : Lateral view.

jet black, dark olive or dark brown; ventrum is pale gray to butter yellow; ventral side of hood is with 2-4 irregular, dark, transverse bars, in many individuals it is uniformly dark; generally there is a spectacle mark on dorsal aspect of hood.

*Distribution* : India : Gujarat : Sabarkantha, Ahmedabad, Surendranagar, Surat, Dangs, Junagarh, Bhavnagar, Panchmahals, Kheda, Vadodara, Bharuch and Valsad districts; Peninsular India, Kashmir, Punjab, Rajasthan, United Provinces, Haryana, Bihar, West Bengal, Orissa, Madhya Pradesh, Andhra Pradesh, Maharashtra, Goa, Karnataka, Tamil Nadu, Kerala.

*Elsewhere* : Sri Lanka.

*Habits and habitat* : Cobra is basically a diurnal snake found in numerous habitats but are most common in agriculture fields and grassy plots with other vegetation, they take shelter in the rodent holder, exposed root-wood work of large trees; dens of small mammals; generally the snakes avoid confrontation with man and other

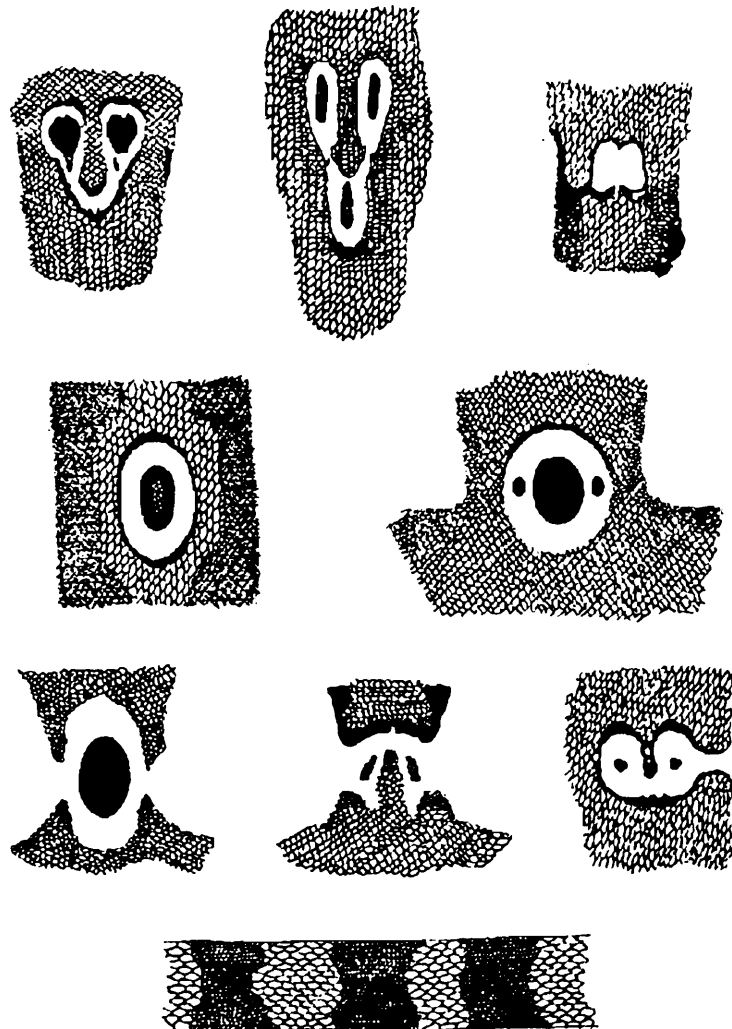
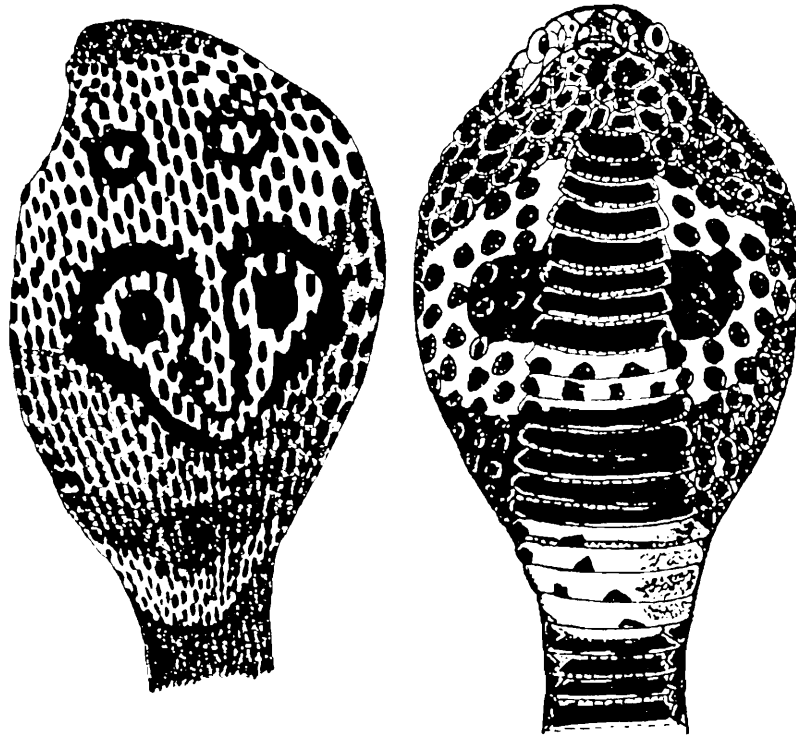


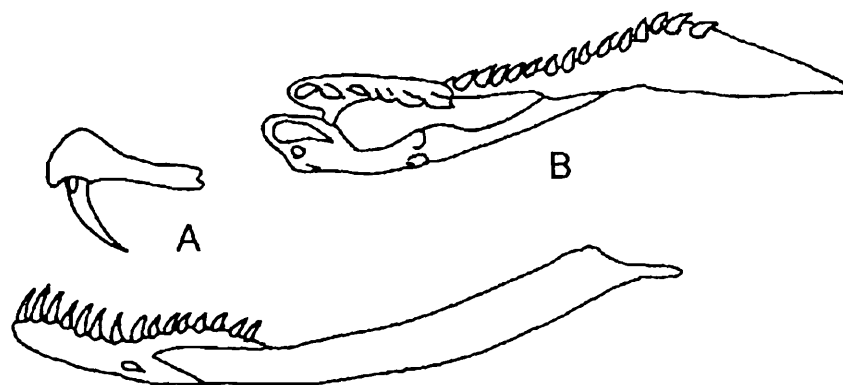
Fig. 154. Different patterns of hood in Cobra, *Naja naja*.

animals but once cornered they spread their hood, hiss and strike again and again. These snakes are most intelligent creatures and become most pugnacious, when offended. Their breeding season starts in April which extends up to late July. Generally 9-45 eggs are laid in May or early June; incubation period is about 62-90 days.

*Status* : The population has been reduced considerably in certain parts of its range in account of habitat destruction for urbanization.



**Fig. 155.** *Naja naja polyocellata*. Dorsal and ventral patterns of colour variety *polyocellata* from Sri Lanka with hood expanded.



**Fig. 157.** *Naja naja*. A. Maxilla and mandible, B. Palato-maxillary arch.

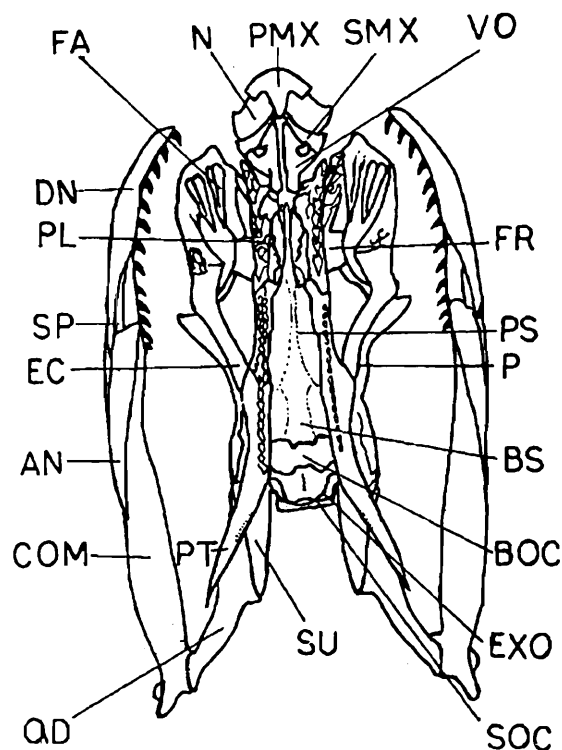


Fig. 158. Skull of cobra (Ventral view).

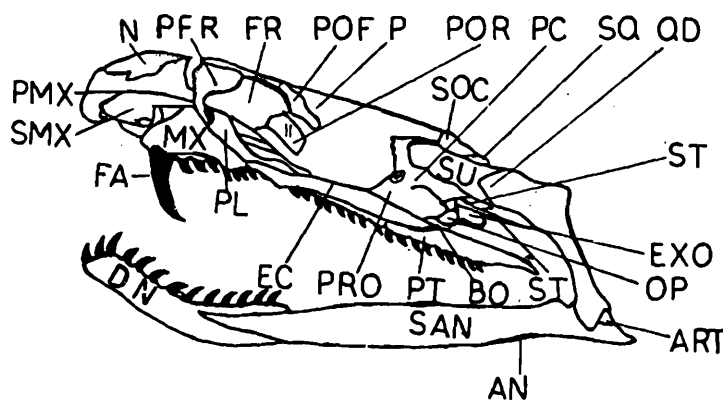


Fig. 159. Skull of cobra (Lateral view).

### MONOCELATE COBRA

#### 278b. *Naja naja kaouthia* Lesson 1831

1831. *Naja kaouthia* Lesson in Ferussac, *Bull. Sci. Nat.*, **25** : 122. and in Belang, *Voy. Ind. Orient. Rept. Sept.*, **1832** : 312, pl. 2 (Bengal).

1943. *Naja naja kaouthia*, Smith, *Fauna Brit. Ind.*, **3** : 428

Other characters are like the nominate subspecies except that 25-31 scales on the neck; 19-21, usually 21, on the body; 17 or 15 in front of the vent; ventrals 164-196; subcaudals 43-58. Dorsal coloration is olivaceous or brownish to black, with or without yellow or orange-coloured O-shaped, or monocellate mark upon the hood, a black spot on the lower surface of the hood on either side, and one or two broad black cross-bars on the belly behind it. The rest of the belly is usually of the same colour at the back but paler.

*Distribution* : India Assam, Bengal, Bihar, Eastern Uttar Pradesh and the Eastern Himalayas as far west as Nepal.

*Elsewhere* : The complete Indo-china as far north as the Triangle in upper Myanmar (Burma), southern china, Tong king.

*Habits and habitat* : Same as the nominate subspecies.

*Status* : A common snake in throughout its range.

## OXUS COBRA

278c. *Naja naja oxiana* (Eichwald 1831)

(Text fig. 156)

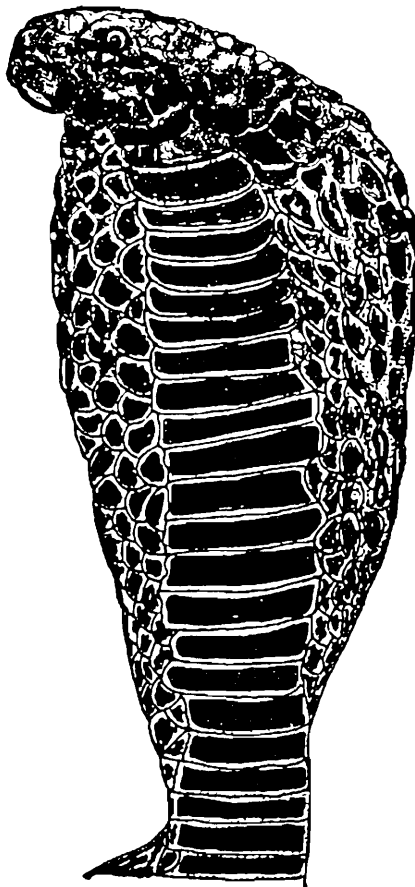
1943. *Naja naja oxiana*, Smith, *Fauna Brit. Ind.*, 3 : 428.1966. *Naja naja oxiana*, Minton, *Bull. Am. Mus. Nat. Hist.*, 134 : 154-155.

Other characters are like the nominate subspecies except that 23-27 scales on the neck, 19-23 at the middle of the body, 17 or 15 in front of the vent; ventral shields are 186-213; subcaudal shields are 62-75. Dorsal colouration is brownish or blackish, devoid of other markings; ventrum is comparatively lighter. Juveniles are grayish or brownish, uniform or with dark reticulation or with dark transverse or chevron shaped cross-bars, bars on hood are more prominent; ventrum is whitish.

*Distribution* : India : Gujarat : Banashantha and Kachchha district, Punjab and Kashmir.

*Elsewhere* : Transcaspia and southern Turkmenstan east across most of Afghanistan and Pakistan (North Frontier Province, northern Baluchistan).

*Habits and habitat* : Same as the nominate subspecies.



**Fig. 156.** *Naja naja oxiana* (Eichwald). The hood.

Genus 70. *Ophiophagus* Gunther 1864

1864. *Ophiophagus* Gunther, *Rept. Brit. Ind.*, : 341 (type *elaps*).

1943. *Naja*, Smith, *Fauna Brit. Ind.*, 3 : 426.

This monotypic genus comprises the largest of the poisonous snakes reaching to a length of 4620 mm and popularly known as King Cobra or Hamadryad. The main generic characters are : Maxillary bone extends anteriorly beyond the palatine; poison fangs are followed by 3 small solid teeth; neck can be expanded into a hood; eyes are moderately large, with a round pupil ; loreal scale is not present; preocular is not in contact with the internasal; a pair of large occipital shields is in contact with each other behind the parietals; third supralabial touches the eye and the posterior nasal; nostril is large, bordered by the two nasals and the internasal; supralabials are 7, the 3rd and 4th touching the eye, and the 5th, 6th and 7th touching the lower anterior temporal; no cuneate shield is wedged in between any of the infralabials; body scales are smooth arranged obliquely; those of the 3 vertebral series are comparatively larger than the others; anterior subcaudal shields; anal shield is not divided i.e it is entire. Genus includes only one species i.e. *Ophiophagus hannah*, distributed in India, Burma, Vietnam, Thailand, Cambodia, Southern China, Malaysia, Malayan Archipelago and Philippines.

## KING COBRA or HAMADRYAD

279. *Ophiophagus hannah* (Cantor 1836)

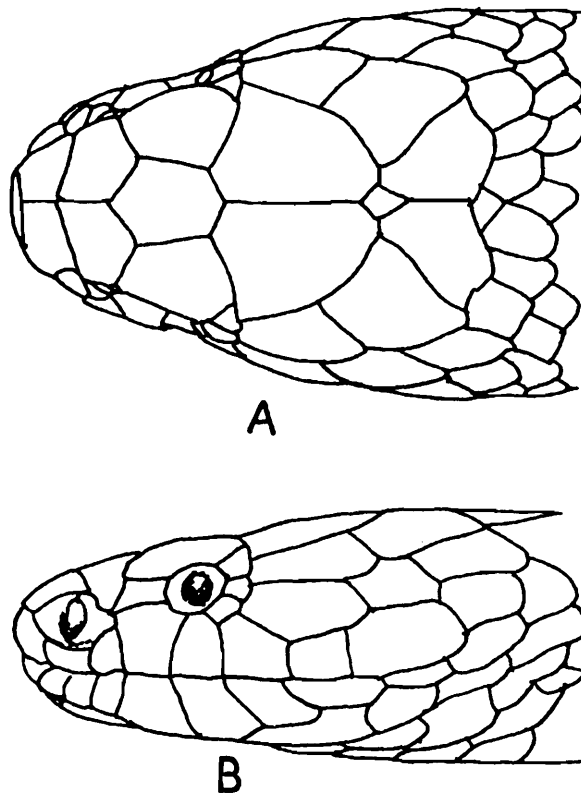
(Text fig. 160)

1836. *Hamadryas hannah* Cantor, *Asian Research*, 19 : 187, pls. 10-11 (Sunderbans, near Calcutta).

1984. *Ophiophagus hannah*, Mahendra, *Ann. Zoology*, 22 :

Besides the characters given under the genus, the characters of the species are : Scales are smooth, in 17 or 19 : 15 : 15 rows; Ventral shields are from 215-270; subcaudal shields are 80-120; hemipenis is very long and deeply forked, extending to the 30th caudal plate or even beyond, forked opposite the fourth. The area at the bifurcating place has a few large, strong spines, the rest of the organ is flounced except the distal extremity, which is calyculate the sulcus lips are smooth. Dorsal colouration is yellow or olive-green or olive-brown or blackish-brown or completely black; generally with distinct yellowish or whitish cross-bars or chevrons on the body, which are narrower than the interval. Many individuals are with variegations in the posterior portion of the body including the tail; ventrum is with a uniform colour, with mottling or distinct bars; throat is generally with light-yellow or creamy colouration. The juveniles are jet black with distinct white or yellow cross-bars or chevron shaped markings on the body and the tail; head is with 4 distinct bars.

*Distribution* : India : Gujarat [Banashantha (Deesa) district]. Peninsular India to the Himalayas, Bengal, Bihar, Orissa, Assam.



**Fig. 160.** *Ophiophagus hannah* (Cantor). Head : A. Dorsal view, B. Lateral view.

*Elsewhere* : As given under genus.

**Habits and habitat** : The snake is diurnal, very pugnacious and aggressive inhabits the rocky, bushy areas; grasslands; plain areas; dense forest; it is fond of water and can climb trees with a remarkable agility. Its main food consists of poisonous snakes like cobras, kraits and its own kind; it can devour other larger non-poisonous snakes and monitor lizards like *Varanus salvator* and *Varanus bengalensis*. Its breeding season starts in April and extends up to July; it is the only snake which makes a nest of leaves or twigs and 20-40 eggs are laid in a single clutch in the lower part of the nest and then it is completely plugged at the middle portion, the upper part of the nest is used by the female king Cobra, where she lies coiled up and guards the eggs, till these hatch out. The young at the time of birth measure 500-530 mm. in length.

**Status** : It is extremely vulnerable in certain parts of its range on account of large scale killing by man for its skin.

#### Family X. HYDROPHIIDAE Boie 1827

##### SEA SNAKES

1827. *Hydrophiidae* Boie, *Isis*, : 410.

1943. *Hydrophiidae*, Smith, *Fauna Brit. Ind.*, 3 : 439.

1966. *Hydrophiidae*, Minton, *Bull. Am. Mus. Nat. Hist.*, 134 : 143.

This family includes the snakes which lead a marine life either living quite near the shore in coastal water and go quite away in off-shore waters for good capture or lead a perfect semi-pelagic life, depending completely on the sea. Most of the species are viviparous, deadly poisonous and piscivorous in food habits. The main characters of sea snakes are : Body scales are small, rhomboidal and overlap; except in few species head is small and not distinct from the neck; the body, including the tail is compressed; eyes are quite small; cranial characters are quite similar to the family Elapidae, as a matter of fact *Hydrophiidae* is the *Elapidae*, which has migrated to the sea and has adopted for the marine way of life, one species of *Hydrophiidae* has gone to lake in Philippines. Teeth are present on maxilla, dentary, palatine and pterygoid bones; maxilla and dentary bones are quite shortened in marine snakes and bear recurved pointed teeth; the anterior most maxillary tooth is a large, erect fang which is grooved and is connected with the poison gland and exhibits proteroglyphus condition; mandibles are devoid of a coronoid bone; maxilla forms a most flexible connection with the ectopterygoid, which had got its posterior extension above the pterygoid; the pterygoid bone in most species reaches to the quadrate; the skeletal elements in the anterior region of skull are united flexibly, thus rendering a most flexible movement of bones in the cranium, the premaxilla is not united with the maxilla and prefrontal is separated from the nasal; supratemporal is freely movable and provides a lever like mechanism in the cranium and the quadrate is quite long and slanting backward, thus providing an increased gape to the jaws in this family members, the vestiges of the pelvis or hind limbs are not present. The family is widely distributed in Indian and Pacific ocean as follows : from complete eastern coast of Africa to the half western coast of South America through Madagascar, complete sea around North coast of Australia and New Zealand, coasts of India, Malaysia, Indonesia, New Guinea, in north up to southern Japan, Island of Oceania as far east as the Samoan Islands, species like *Pelamis platurus* has surpassed this limit and has crossed the Pacific ocean and has reached to the western coast of tropical America, and the Indian ocean to the eastern coast of Africa. Sea snakes have not been found in the seas around Maldives and Laccadive Islands. Most of the members of this family are most agile and fine swimmers but they become help-less on land as the proper ventral shield, which are require for terrestrial locomotion are lacking. On land their movements are slow and clumsy. The family includes more than 50 species distributed in 16 genera.

#### Key to genera of family HYDROPHIIDAE

- I. Ventral shields are large, one third to more than one-half the breadth of body, maxillary bone extends forward much beyond the palatine bone.
  - A. Nostrils and lateral in position, nasal shields are separated by the internasals  
 ..... *Laticauda*

- B. Nostrils are superior in position, nasal shields are in contact with one another ..... *Aepyurus*
- II. Ventral shields may be small (not more than 1/4 the breadth of the body) by distinct or may be absent, maxillary bone not extending forwards beyond the palatine bone, except in *Kerilia* and *Microcephalopsis*.
- A. Ventrals are generally entire and distinct throughout.
- a. Head shields regular and normally entire.
1. Maxillary bone extend forwards beyond the palatine bone; diastema after the poison fangs absent or feebly distinct; not more than 23 scales round the thickest part of body ..... *Kerilia*
2. Maxillary bone not/never extend forwards beyond the palatine bone; diastema after the poison fangs is quite distinct; more than 25 scales round the thickest part of body.
- i. Mental shield is normal; ventrals broad anteriorly, but narrow posteriorly; 5 maxillary teeth are present ..... *Praescutata*
- ii. Mental shields is elongate; partly concealed, in a groove in the symphysis; ventral shields are uniform in size; 3-5 maxillary teeth are present ..... *Enhydrina*
- iii. Mental shields is normal; ventral shields are of uniform size; 1-18 maxillary teeth are present ..... *Hydrophis*
- b. Head shields more or less divided.
1. Dorsal scales are large, in regular rows of 31-35 at mid-body ... *Thalassophis*
2. Dorsal scales small, in regular rows of 70-90 at mid-body ..... *Kolphophis*
- B. Ventral shields are generally divided by a medial longitudinal fissure (except quite anteriorly) or are vestigial (smaller than adjoining dorsal scale or absolutely missing). Usually well developed throughout in *Lapemis curtus*.
1. Ventral shields entire or vestigial or absent; dorsal scales juxtaposed, the lower most 3 or 4 rows larger than the others ..... *Lapemis*
2. Ventral shields in two halves, dorsal scales pointed and strongly imbricate ....  
..... *Astrotia*
3. Ventral shields, if distinct are with a longitudinal, fissure; dorsal scales juxtaposed, subquadrangular in shape ..... *Pelamis*
4. Ventral shields are divided by a longitudinal fissure, scales are juxtaposed .....  
..... *Microcephalopsis*

Genus 71. *Laticauda* Laurenti 1768

1768. *Laticauda* Laurenti; *Syn. Rept.*, : 109 (type *scutata*).

1943. *Laticauda*, Smith, *Fauna Brit. Ind.*, 3 : 442.

Maxillary bone much shorter than the ectopterygoid, extending forwards beyond the palatine. Poison fangs followed after an interval by 1 or 2 teeth. Body subcylindrical, of equal diameter throughout. Head shields large, entire. Nostrils lateral. Internasals present, completely separating the nasals from each other. Scales imbricate and smooth throughout, in 19-25 rows. Ventrals large, at least half as broad as the body.

Only two species are found in the Indian subcontinent, both of which range from the Bay of Bengal and the seas south of Japan to the coast of Australia and islands of Oceania.

Key to the species of the Genus *Laticauda*

1. Prefrontals are separated from each other by a median shield; scales in 21-25 rows, throughout ..... *colubrina*
2. Prefrontals in contact with each other mesially; scales in 19 rows throughout ..... *laticaudata*

280. *Laticauda laticaudata* (Linnaeus 1758)

(Text fig. 161)

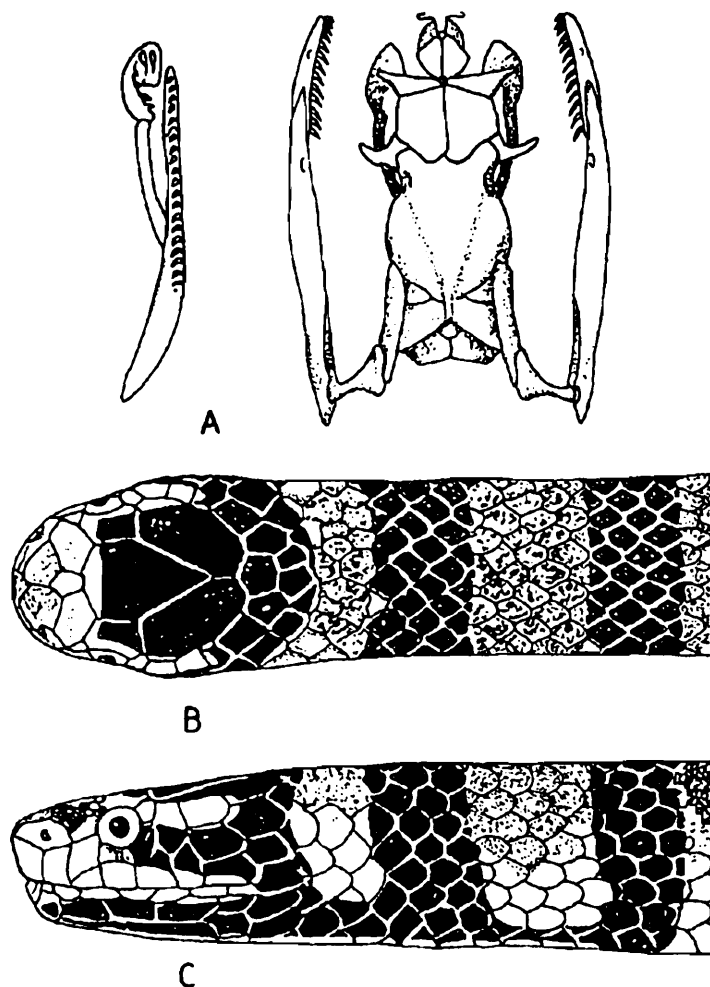
1758. *Coluber laticaudatus* (in part) *Linn. Syst. Nat.*, 10th ed., : 222 (India).

1943. *Laticauda laticaudata*, Smith, *Fauna Brit. Ind.*, 3 : 442.

Total length of male 910 mm, tail 110 mm; female 1070 mm, tail 110 mm. Color on the body as in *L. colubrina*. Head black, with a curved yellow mark, above, this color often extending forwards to cover the whole of the snout and downwards behind the eye to reach the lip. A median elongated patch of yellow on the jaw below, variable in width and usually connecting with the first yellow ring upon the neck. Head shields as in *Laticauda colubrina*, except that there is no azygous shield separating the prefrontals and the scales are in 19 rows. Ventrals 225-243. Subcaudals : Male 38-47; female 30-35. A median ventral keel sometimes present on the posterior part of the body. Hemipenis is forked near the tip; the distal 1/3 of the organ bears spines which are quite short and situated on a flattened base and arranged in a longitudinal series; the remaining portion of the penis is plicate, the folds are sinuous and are arranged in a longitudinal fashion.

*Distribution* : As in the genus.

*Status* : Rare in the Oriental region (Calcutta and little Nicobar Harbour).



**Fig. 161.** A. Skull and palato-maxillary arch of *Laticauda laticaudata* (Linnaeus). B. Dorsal pattern of head and body of *Laticauda colubrina* (Schneider). C. Lateral pattern of head and body of *Laticauda colubrina* (Schneider).

281. *Laticauda colubrina* (Schneider 1799)  
(Text fig. 161)

1799. *Hydrus colubrinus*, *Hist. Amphib.*, : 238

1943. *Laticauda colubrina*, Smith, *Fauna Brit. Ind.*, 3 : 443.

Total length in males 875 mm, tail 130 mm, and in females 1420 mm, tail 145 mm. The dorsal color is light of dark bluish gray above, yellowish below, with black bands, snout is yellow, the color extending backwards on each side of the head above the eye and along the upper lip, leaving a dark bar in between. Rest of the head black. Rostral large, higher than broad, nostril in a single nasal. Prefrontals separated from each other by an azygous shield, sometimes absent. No, loreal. Preocular 1. Postocular 2, followed by 1 large anterior and 2 posterior temporals. Supralabials 7-8, the 3rd and 4th touching the eye. Both pairs of sublinguals well developed, in contact. Scales

in 21 to 23 (rarely 25) rows. Ventrals 213-245. Subcaudals : Male 37-47; female 29-35. Anal divided. Hemipenis is forked near the tip; the complete organ bears spines, which are short, thick and closely set in the distal half; spines are longer and fewer in number in the proximal half.

*Distribution* : As in the genus. It has been recorded from Calcutta; Ramri Island of the coast of Arakan (Myanmar) and the Andaman and Nicobar Islands.

*Status* : Very rare in Indian Ocean and Indo-Chinese waters but quite common at Singapore.

### Genus 72. *Kerilia* Gray 1849

1849. *Kerilia* Gray, *Cat. Sn. Brit. Mus.*, : 57 (type *jerdoni*).

1943. *Kerilia*, Smith, *Fauna Brit. Ind.*, 3 : 446.

Maxillary bone longer than the ectopterygoid, extending forwards beyond the palatine. Poison fangs followed with scarcely any interval by 7-9 teeth. Body robust, elongate, of almost equal diameter throughout. Snout is declivous, much narrowed anteriorly. Head shields entire. Nostrils superior. Nasals in contact with each other. Prefrontals small, usually not in contact with the supralabials. No loreal, Preocular 1, Postocular 1. Supralabials 6, the last often confluent with the single anterior temporal, the 3rd and 4th touching the eye. Sublinguals both pairs well developed, in contact with each other. Scales in 19 to 23 rows at midbody, imbricate, and strongly keeled. Ventrals narrow, not much broader than the adjacent scales. Anals 2. The genus includes single species.

### JERDON'S OLIVE SEA SNAKE

#### 282. *Kerilia jerdoni* Gray 1849

(Text fig. 162)

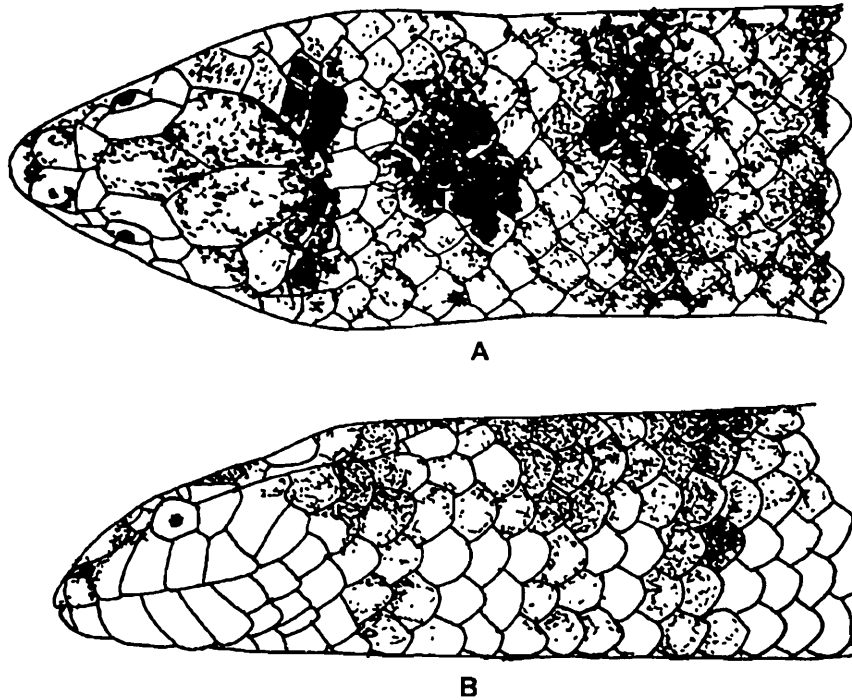
1849. *Kerilia jerdoni* Gray, *Cat. Sn. Brit. Mus.*, : 57 (Madras; London).

1943. *Kerilia jerdoni*, Smith, *Fauna Brit. Ind.*, 3 : 447.

The maximum length is 1000 mm tail 100 mm. The dorsal colour is olive above, yellowish or white beneath, with black dorsal spots or rhombus which extend in the young round the body to form complete bands. Intermediate dorsal spots or bars usually present. Characters as in the genus. Ventrals 225-253 for specimens from the coasts of India and Gulf of Siam. Hemipenis is forked near the tip; the complete organ bears the spines which are of moderate size, closely set and become slightly larger as they reach to the proximal end.

*Habits and habitat* : Deraniyagala (1955, p. 89) mentions that a female gave birth to 4 young in June, and the newly born were 387 to 480 mm long.

*Distribution* : The east coast of the Indian Peninsula, Sri Lanka, the Mergui



**Fig. 162.** *Kerilia jerdoni* Gray. A. Dorsal pattern of head and neck, B. Lateral pattern of head and neck.

Archipelago and the Straits of Malacca; the east coast of the Malayo-Siamese Peninsula, Cochin China and S. Annam; and Borneo.

*Status* : A common snake in throughout its range.

#### Genus 73. *Praescutata* Wall 1921

1921. *Praescutata* Wall, 1921, *Sn. Ceylon*, : 390 (type *viperina*).

1966. *Praescutata*, Minton, *Bull. Am. Mus. Nat. Hist.*, 134 : 148.

Malcolm A. Smith (1926, pp. 33-36), in ignorance of Wall's prior description of this genus (1921, p. 390), described it as a new genus and called it *Thalassophina*, but later on (1943, p. 448) he corrected his mistake. Maxillary bone longer than the lower aspect of the ectopterygoid not extending forwards as far as the palatine, which is curved strongly outwards. Poison fangs followed after an interval by 5 teeth. Head depressed, distinct from the neck, with the snout broadly rounded. Head shields large, entire. Nostrils superior. Nasals in contact with each other, the nasal cleft running from the prefrontal to the 1st supralabial and completely dividing the shield. Prefrontals not in contact with the supralabials. Sublinguals well developed, the posterior pair usually larger than the anterior, the anterior two in full contact with each other, the posterior two separated behind by a scale. Supralabials 7-9, the 3rd to 5th or only two of them touching the eye. Temporals variable. Scales in 37-50 rows on the richest part of the body, more or less hexagonal in shape, juxtaposed. Ventrals

half as broad as the body anteriorly, narrowing gradually until the posterior ones are not twice as broad as the adjacent scales. Anal shields considerably enlarged.

A single species.

#### VIPERINE SEA SNAKE

##### 283. *Praescutata viperina* (Schmidt 1852)

1852. *Thalassophis Schmidt, Abh. Nat. Ver. Hamburg, ii* : 79, pl. iii.

1966. *Praescuta viperina*, Minton, *Bull. Am. Mus. Nat. Hist.*, **134** : 148-149.

The maximum length in males 925 mm, tail 100 mm, and in females 820 mm, tail 80 mm. There are three color forms : (1) gray above with 25-35 dark rhomboidal spots or bars, usually more or less confluent; (2) gray above, meeting on the flank with the white below in a fairly clear line of demarcation; and (3) completely banded. The first two are common, and the third rare. Characters as in the genus. Ventrals normally 226-274. Hemipenis in forked near the tip and the complete organ bears the spines except the proximal end, where there are longitudinal folds.

*Distribution* : From the Persian Gulf to southern China and the Malay Archipelago.

*Status* : The first and second colour forms mentioned above are quite common but the third one is rare.

#### Genus 74. *Enhydrina* Gray 1849

1849. *Enhydrina* Gray, *Cat. Sn. Brit. Mus.*, : 47 (type *valakadyen*).

1943. *Enhydrina*, Smith, *Fauna Brit. Ind.*, **3** : 499.

1966. *Enhydrina*, Minton, *Bull. Am. Mus. Nat. Hist.*, **134** : 147.

This monotypic genus includes the deadly poisonous snakes with elongated, compressed body; head shields are entire; nostrils are superior, nasal shields are in contact with one another; mental shield is narrow, some what elongated, partly concealed in a groove in the symphysis, maxillary bone never extends anteriorly beyond the palatine (if reaches as far as the palatine); poison fangs are followed after an interval by 3 or 4 teeth; body scales are imbricate or subimbricate, in 49-66 rows at the thickest part of the body; ventral shields are distinct throughout, a little broader than the adjacent scales; hemipenis is forked for about half its length, the tip of the hemipenis bears coarse, flattened, papilla-like structure arranged in longitudinal series, the rest of the organ is with moderately large, closely set spines which are slightly larger towards the base. Genus is monotypic.

##### 284. *Enhydrina schistosa* (Daudin 1803)

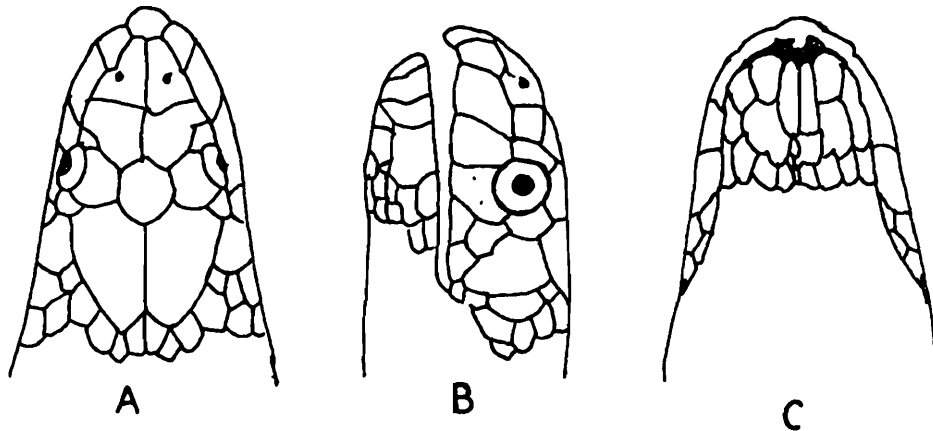
(Text fig. 163 & 164)

1803. *Hydrophis schistosus* Daudin, *Hist. Nat. Rept.*, **7** : 386. (based on Russell 2 : pl. 10; Tranquebar).

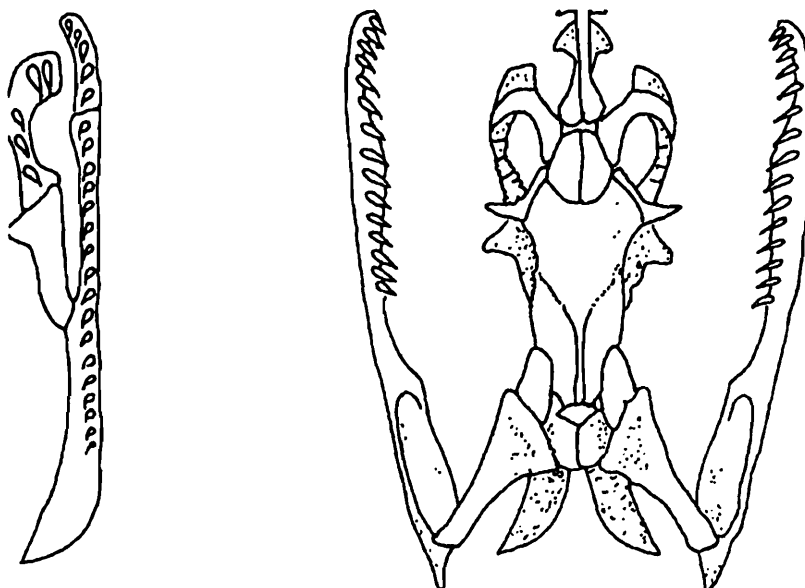
1943. *Enhydrina schistosa*, Smith, *Fauna Brit. Ind.*, 3 : 449.

1966. *Enhydrina schistosa*, Minton. *Bull. Am. Mus. Nat. Hist.*, 134 : 147-148.

In addition to the characters as given under the genus the following more are worth consideration : these snakes reach to a maximum length of about 1580 mm (generally the snakes are about 1100-1200 mm in length); eyes are moderately large; rostral broader than its vertical length, prefrontal shields are quite narrow anteriorly; frontal shield is small, shorter than its distance from the end of the snout; one preocular; one postocular generally but in certain individuals two postoculars are also available; supralabials 7 or 8, the 3rd and 4th or 4th only touching the eye, the last 2-3 are quite small; generally a single anterior temporal shield is present; mental shield is narrow, elongate and partly concealed in a groove in the symphysis; infralabials are 5, in contact with the genial, which are poorly developed and separated by scales;



**Fig. 163.** *Enhydrina schistosa* (Daudin). Head : A. Dorsal view, B. Lateral view, C. Ventral view.



**Fig. 164.** *Enhydrina schistosa*. Skull and palato-maxillary arch.

40-52 scales rows on the neck in males, 42-55 in females; 49-60 on the body in males, 51-66 in females; the body scales are imbricate or subimbricate, with a short central keel; ventral shields are from 239-354 (generally 239-322), distinct throughout; slightly broader than the adjoining scales; preanal shields are feebly enlarged, dorsal colouration is gray or grayish with a bluish tinge; with dark-gray or black annulation, which are broadest on the dorsum; ventrum is whitish. This colour pattern is most conspicuous in juveniles and as the age increases all the markings vanish or become faint and the complete snake becomes uniform gray.

*Distribution* : India : Gujarat : Bhavnagar, Amreli, Junagarh and Jamnagar district. Coastal waters of Goa, Tamil Nadu, Orissa, West Bengal.

*Elsewhere* : Gulf of Oman, Seychelles, South Vietnam Coast, North coast of Australia, Rockhampton coast, Coast of Burma and Sunday Bay in Thailand.

*Habits and habitat* : This deadly poisonous marine snake prefers to live generally in the shallow coastal water but when sea is calm it goes sufficiently advance in offshore waters also, in search of fishes and crustaceans which form the major component of its diet. It devours large prawns and fishes like *Tetrodon coilia*, *Harpodon*, and Gobid fishes. This snake is generally docile and bites only on extreme mishandling. This species is ovoviviparous. Deraniyagala (1955, p. 83) states that its brood contained 4-9 juveniles (254-279 mm. in length).

*Status* : A common snake, throughout its range.

#### Genus 75. *Hydrophis* Latreille 1802

1802. *Hydrophis* Latreille, *Hist. Nat. Rept.*, 4 : 193 (type *fasciatus*).

1943. *Hydrophis*, Smith, *Fauna Brit. Ind.*, 3 : 451.

1966. *Hydrophis*, Minton, *Bull. Am. Mus. Nat. Hist.*, 134 : 143-144.

This genus includes marine or blackish water snakes showing plenty of variations and its many species are subject to the evolutionary changes. The main generic characters are : Tail is laterally compressed; nostrils are dorsal in position, pierced in nasal shields, which are in contact with one another; eyes are small with round pupil; poison fangs are short and fixed, followed after an interval by 1-18 maxillary teeth; loreal shield is not present; ventral shields are small, but quite distinct. The genus comprises about 22 species distributed from Persian gulf to the Idzu Sea of Japan; coast of Tasmania in the south; across the Pacific ocean to the Gilbert Islands. About 9 species are available from India.

#### Key to the species of the Genus *Hydrophis*

- I. Parietals not touching the postoculars; 14-18 maxillary teeth behind the poison fangs; 40-60 broad more or less distinct; head black or dark gray .....  
 .....*caerulescens*

## II. Parietals touching the postoculars

- A. No supralabial touching the prefrontal; 1 or 2 maxillary teeth behind the poison fangs; head yellow with a dark triangular patch on the top and a dark streak along the upper lip ..... *nigrocinctus*
- B. The 2nd supralabial touching the prefrontal
- a. Costals with short bi- or tri dentate keel; 5 to 8 maxillary teeth behind the poison fangs. Small, wedge-shaped scales (cuneates) present on the oral border between the infralabials after the 2nd or 3rd; normally 2 anterior temporals; dark annuli about as wide as the interspaces ..... *cyanocinctus*
- b. Costals with a round central tubercle or a short median keel, sometimes smooth or feebly keeled. Cuneates either absent or only 1 or 2 present.
1. Posterior pair of sublinguals ill developed, separated by scales; 10-13 maxillary teeth behind the poison fangs; body with broad dark bars or rhomboidal spots separated by narrow interspaces ..... *ornatus*
2. Both pairs of sublinguals well developed, the posterior ones in contact or separated by scales.
- i. Scales on the thickest part of the body with rounded or bluntly pointed tips, distinctly or feebly imbricate; normally one large anterior temporal, often descending to the labial border; 5-7 maxillary teeth behind the poison fangs.
- a1. Head moderate, body elongate, not slender anteriorly, its greatest diameter posteriorly being 2 times, or a little more, than that of the neck; usually a small scale (cuneate) at the oral margin after the 3rd or 4th infralabial; yellowish or yellowish-green, with black annuli much narrower than their interspaces; head in the adult usually entirely yellowish; in the young blackish with a yellow horse-shoe shaped mark above ..... *spiralis*
- a2. Head small, body long and slender anteriorly, much compressed posteriorly, its greatest diameter being 3-4 times that of the neck; ventrals bicarinate; color black, bluish-black or grayish, with 35-55 bright yellow or whitish dorsal bars, which may become complete bands in the hinder parts of the body .... *obscurus*
- ii. Scales on the thickest parts of the body hexagonal or subquadrangular in shape, juxtaposed or feebly imbricate.
- a1. Head, small, body slender anteriorly, much compressed posteriorly, its greatest diameter being 2.5 to 4 times that of the neck.
- b1. Normally one anterior temporal.
- c1. 5 or 6 maxillary teeth behind the poison fangs; head, neck and anterior part of the body black or dark olive; body with lateral spots or cross-bars; 25-33 scale rows on the neck ..... *fasiatus*

- c2. 8 to 11 maxillary teeth behind the poison fangs; head black to olive with yellow markings, chiefly upon the snout and along the sides of the head; 34-41 scale-rows on the neck; ventrals bicarinate.....*stricticollis*
- b2. 2 or 3 anterior temporals; 8-10 maxillary teeth behind the poison fangs; head entirely black or with a yellow streak on the temporal region; 44-55 broad black bands on the body..... *mamillaris*
- a2. Head moderate; body robust in the adult, not markedly elongate, its greatest diameter being 2-3 times that of the neck; 2 or 3 anterior temporals; 8-11 maxillary teeth behind the poison fangs; head in the young with a yellow curved mark on the top and the body with 33-43 blackish bands, the markings being indistinct or lost in the adult ..... *lapemoides*

#### OLIVACEOUS BANDED SEA SNAKE

##### 285. *Hydrophis nigrocinctus* Daudin 1803

1803. *Hydrophis nigrocinctus* Daudin, *Hist. Nat. Rept.*, 7 : 380.

1943. *Hydrophis nigrocinetus*, Smith, *Fauna Brit. Ind.*, 3 : 452.

Total length in male 1080 mm, tail 125 mm. The dorsal color is olivaceous to brownish above; yellowish below; with 40-60 narrow dark cross-bands, more or less uniform in width, sometimes in-complete ventrally. Head yellow, with a dark streak along the upper lip and a dark triangular patch on the top of the head extending to the prefrontals. Besides the characters given in the generic key, temporals small and scarcely differentiated from the adjacent scales. Supralabials 7-9, the 2nd normally not touching the prefrontal, the 3rd, 4th and 5th touching the eye, the last 4 or 5 very small. Posterior sublinguals not in contact. Scales imbricate throughout and strongly keeled, with short median keel. Ventrals indistinct throughout and strongly keeled, with short median keel. Ventrals indistinct throughout, not twice as broad as the adjacent scales. Anals considerably enlarged. Hemipenis forked near the tip and bears spines throughout which are short and thickest at the base.

*Distribution* : The Bay of Bengal (Sundarbans) and the Burmese coast.

*Status* : A rare species.

#### YELLOW SEA SNAKE

##### 286. *Hydrophis spiralis* (Shaw 1802)

1802. *Hydrus spiralis* Shaw, *Gen. Zool.*, 3 : 564, pl. (Indian ocean).

1943. *Hydrophis spiralis*, Smith, *Fauna Brit. Ind.*, 3 : 453.

1966. *Hydrophis spirales*, Minton, *Bull. Am. Mus. Nat. Hist.*, 134 : 145-146.

Total length of the snake generally reaches up to 1760 mm. in males and 1950 mm. in females (the largest specimen recorded measures 2745 mm. from Penang,

Malaysia). The body is elongated, head moderately large, snake is not slender in the anterior region; the thickest posterior part is almost two times or more than the diameter of the neck; eyes are quite small; frontal is a well developed shield, almost as long as its distance from the tip of the snout; preocular is one; postoculars one or rarely 2; a single large anterior temporal after descending to the labial margin; supralabials 6-8, the 2nd in contact with the prefrontal, the 3rd, 4th and 5th, or only two of them, touching the eye; infralabials are 4, in contact with the genials, which are in two well developed pairs and remain in contact with one another; in most of the individuals, there is a small scale at the oral margin after the 3rd and 4th infralabial; 25-31 scale rows on the neck, 33-46 on the thickest parts of the body (generally from 33-38), the scales are feebly imbricate throughout, smooth or with a small central tubercle or short keel; ventral shields are 295-362, distinct throughout, twice as broad as the adjacent scales; preanal shields are enlarged; hemipenis is forked near the tip, and bears spines every where on the organ except near the base, where the organ is made up of distinct longitudinal folds. Dorsal colouration is yellowish or yellowish-green, golden-yellow; dorsal scales with narrow black margins; flanks and ventral surface is pinkish-white; about 44-48 black annulation on the whole body, which are widest in the vertebral region and become narrow on flanks and on the ventrum; these annuli are narrower than interspaces between them and contain several light-centered scales, mainly on the posterior half of the body; tail is with 4-7 bands and irregular black patch near the tip; head is yellow in adult but in young it is somewhat blackish, with yellow horse shoe-shaped mark; chin and throat are white to pale gold.

*Distribution* : India : Gujarat : Bhavnagar, Junagarh and Jamnagar districts. All coasts of India.

*Elsewhere* : From Persian Gulf to Celebes on southern side and Philippines in the north.

*Habits and habitat* : The snake is most pugnacious and bites readily without provocation. It is mainly a fish-eater.

*Status* : Common snake throughout its range.

#### ANNULATED SEA SNAKE

#### 287. *Hydrophis cyanocinctus* Daudin 1803

(Text figs. 165 & 166)

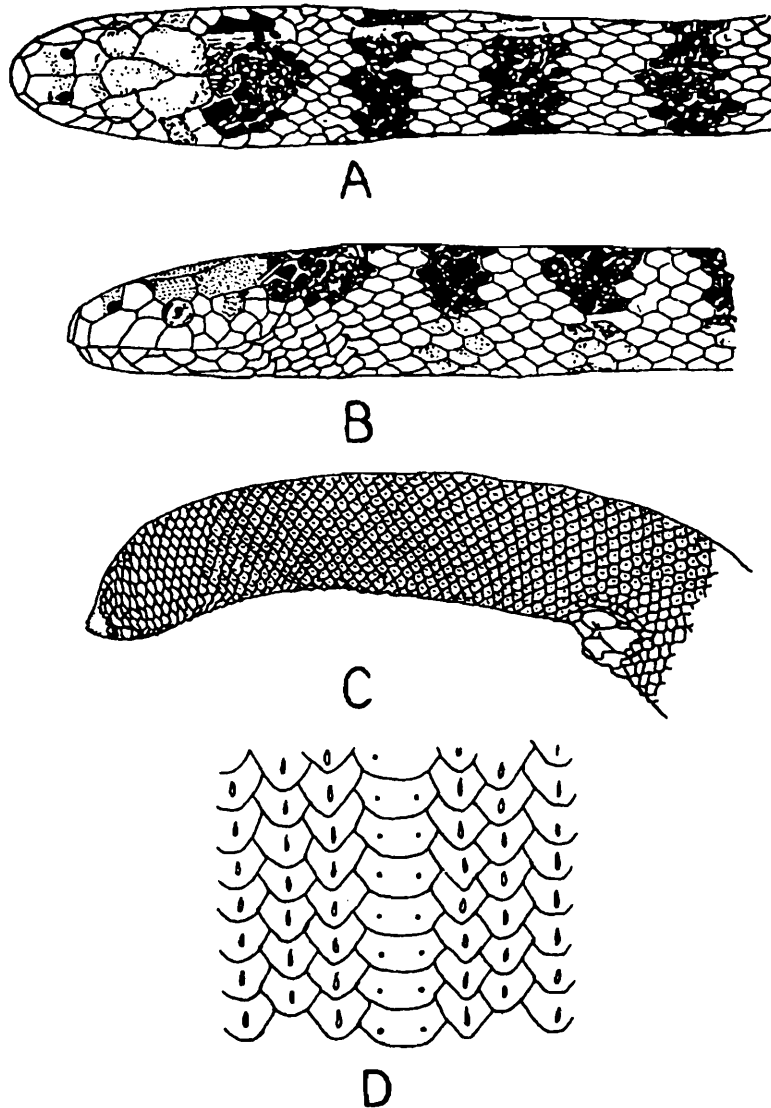
1803. *Hydrophis cyanocinctus* Daudin, *Hist. Nat. Rept.*, 7 : 383 (based on Russell's pl. 9 : 10 (Sunderbans)).

1943. *Hydrophis cyanocinctus*, Smith, *Fauna Brit. Ind.*, 3 : 454.

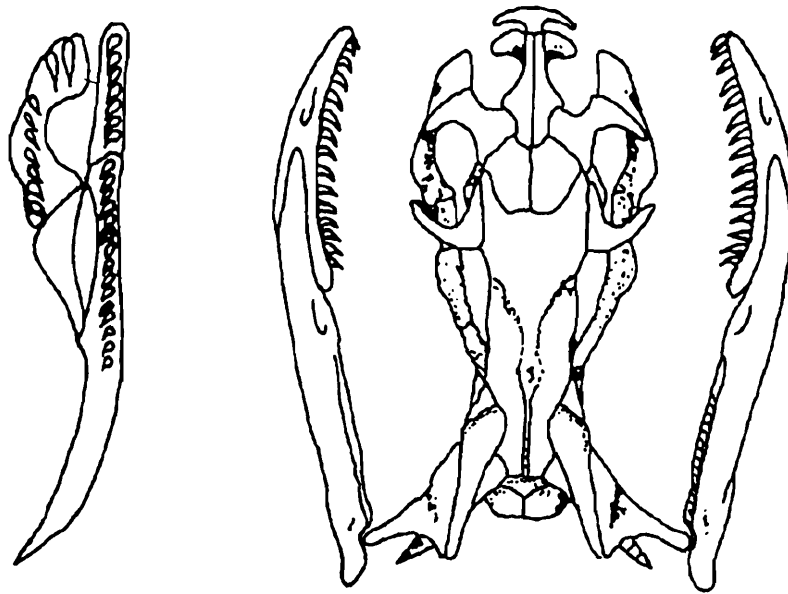
1966. *Hydrophis cyanocinctus*, Minton, *Bull. Am. Mus. Nat. Hist.*, 134 : 144-145.

This snake is with an elongated body reaches to a length of about 1630 mm. in males, 2020 mm. in females; body is not slender anteriorly, compressed posteriorly,

the greatest diameter in the adult being from 2 to 2.5 times that of the neck; eyes are comparatively smaller in adults; frontal shield is generally as long as its distance from the rostral or the end of the snout; preocular is one; postoculars are two; generally 2 superposed anterior temporals; supralabials are 7-8, the 2nd touches the prefrontal, the 3rd, 4th and 5th, or only two of them touch the eye; infralabials are 4, in contact with the genials which are in two pairs i.e. anterior and posterior; both the pairs of genials are well developed, and in contact with one another or the posterior in some individuals is separated by scales; a series of small scales are present at the oral margin after the second or third infralabial; 25-35 scale rows are present on the neck, 37-47, on the thickest part of the body (increase 8-14), the scales are imbricate throughout, generally with a central keel, which may be broken up into a series of two or three tubercles; ventrals shields are 290-390, which are distinct throughout,



**Fig. 165.** *Hydrophis cyanocinctus* Daudin: A. Dorsal pattern of head and neck, B. Lateral pattern of head and neck, C. Lateral pattern of tail, D. Scales on belly.



**Fig. 166.** *Hydrophis cyanocinctus*. Skull and palato-maxillary arch.

anteriorly about twice as broad as the adjoining dorsal scales, posteriorly a little less; preanal shields are much enlarged; hemipenis is forked near the tip, and bears spines everywhere on the penis except near the basal portion, where these are transformed into the longitudinal folds; large number of spines are present on the edges of the sulcus. Dorsal colouration is dirty white, pale-greenish or yellow, with 48-67 sooty cross bands, central portions of which generally enclose lighter scales, bands widest on middorsal aspect, narrower on lateral aspects; in certain individuals these bands encircle the body, in others the midventral region remains clear or marked with longitudinal black stripe; on dorsum the cross bands are wider than the interspaces between them; tail colouration is some what darker than body, with 6-9 black bands; head in juveniles is blackish, with a yellow curved mark on the crown, in adult the head is olive, reddish or dull yellow, with back mottling in most individuals; chin and throat are dark gray.

*Distribution* : India : Gujarat : Bhavnagar, Junagarh and Kachchha districts. West coast of Indian Peninsula, east coast of India.

*Elsewhere* : Persian Gulf to the Idzu Sea of Japan; Sri Lankan coast; islands of Indonesia; Gulf of Siam; the Burmese coast; coastal areas of Pakistan.

*Habits and habitat* : Found in shallow, muddy, mangrove swamps, these snakes can crawl on land easily and an adult can lift its head above the ground. They are piscivorous in habit. This is a most dangerous species and bite can be proved fatal.

*Status* : It is most common species, throughout its range, rare south of equator.

## BLUISH-BLACK SEA SNAKE

288. *Hydrophis obscurus* Daudin 1803

1803. *Hydrophis obscura* Daudin, *Hist. Nat. Rept.*, 7 : 375. (based on Russell, 2, pl. 8, Sundarbans; London).

1943. *Hydrophis obscurus*, Smith, *Fauna Brit. Ind.*, 3 : 457.

Total length is 1200 mm, tail 110 mm. The dorsal and other colouration in young black or bluish-black, with 35-55 bright, yellow or whitish dorsal bars, becoming complete bands on the hinder part; top of the head with a curved yellow mark which has its apex on the snout and extends along on either side to the parietal shields. In older individuals markings indistinct; back more or less uniform grayish or bluish blue; and under parts yellowish. Besides the characters given in the generic key, supralabials 6-7, the 3rd and 4th touching the eye, the last 1-2 very small. Posterior sublinguals usually separated by scales. Scales imbricate throughout and smooth or with a central keel. Ventrals distinct throughout, not twice as broad as the adjacent dorsal scales, bicarinate. Hemipenis is forked near the tip and bears spines all over, which are of the uniform size.

*Distribution* : From the east coast of India (Madras, Orissa coast, Chilka Lake, Sundarbans, Chittagong) to the Burmese coast (mouth of the Irrawadi, and Mergui Archipelago).

*Status* : A common snake in throughout its range.

289. *Hydrophis bituberculatus* Peters 1872

1872. *Hydrophis bituberculatus* Peters, *Mon. Akad. Berlin*, : 855, pl. ii (Colombo; Berlin).

1943. *Hydrophis bituberculatus*, Smith, *Fauna Brit. Ind. Rept.*, 3 : 458.

The total length of this marine snake reaches up to 1120 mm, tail 110 mm. Dorsum is grey and ventrum is grey with yellow tinge. Head is moderate, body elongate, not slender anteriorly, much compressed posteriorly, its greatest diameter is almost four times that of the neck; maxillary teeth are 798, behind the poison fangs; eye is of moderate size; frontal shield is shorter than its distance from the rostral; preocular is 1; postoculars are 2; a single small anterior temporal followed by another large scale; supralabials, 6-7, the 2nd in contact with the prefrontal, the 3rd and 4th touch the eye; 4 infralabials are in contact with the genials, the posterior pair of which are larger than the anterior; 27 scale-rows on the neck, 48 on the thickest part of the body, the posterior scales subimbricate, smooth or with a short central keel; ventrals, 276, two times broader than the adjacent scales anteriorly, a little narrower posteriorly.

*Distribution* : Sri Lanka (Colombo).

*Status* : Very rare, known from a single adult specimen.

BLACK-HEADED GRAYISH SEA SNAKE  
290. *Hydrophis stricticollis* Gunther 1864

1864. *Hydrophis stricticollis* Gunther, *Rept. Brit, Ind.*, : 376, fig. (India; London).

1943. *Hydrophis stricticollis*, Smith, *Fauna Brit. Ind.*, 3 : 459.

Total length in males 1050 mm, tail 140 mm, and in females 1050 mm, tail 90 mm. The dorsal colouration is grayish or olivaceous above, yellowish below, with 45-65 dark bands, which are broadest dorsally and become indistinct with age. Head black to olive, with yellow markings chiefly upon the snout and along the sides of the head. Besides the characters given in the generic key, supralabials 7-8, the 2nd in contact with the prefrontal, the 3rd and 4th touching the eye, the last 2-3 small. Posterior scales more or less hexagonal, subimbricate, and with a short median keel. Ventrals distinct throughout, not twice as broad as the adjacent dorsal scales, bicarinate. Hemipenis is forked at the junction of the distal one-third and proximal two-thirds, the complete organ bears spines; the spines at the proximal end are short, stout and are arranged in oblique series; the spines present at the distal end are comparatively longer and not arranged in a regular fashion.

*Habits and habitat* : A Burmese specimen, opened by Wall, contained 9 eggs, 38-19 mm. in size.

*Distribution* : The east Coast of India, north of Orissa and the coast of Myanmar (Burma) as far south as the Gulf of Martaban.

*Status* : Available in sufficient number in throughout its range.

PALE-GRAYISH SEA SNAKE  
291. *Hydrophis ornatus ornatus* (Gray 1842)

1842. *Aturia ornata* Gray, *Zool. Misc.*, : 61 (Indian ocean; London).

1943. *Hydrophis ornatus ornatus*, Smith, *Fauna Brit. Ind.*, 3 : 460.

Total length in male 950 mm, tail 115 mm and in females 860 mm, tail 80 mm. The dorsal colour is pale greyish, olivaceous or almost white above, with broad dark bars or rhomboidal spots separated by narrow interspaces. Below yellowish or whitish. Head olivaceous. A juvenile, 34+4 cm. long, collected by Mertens (1969, p. 77) at Astola inland, had several light spots on the top of the head arranged in an oval figure in the middle of the parietal region and extending as a trilobed mark up to the hinder border of the rostral.

Besides the characters given in the generic key, head is large, its breadth (between the eyes) in the adult 1/2 or more than 1/2 its length (i.e. to the end of the parietals). Body robust, not markedly elongate, its greatest diameter posteriorly being about twice that of the neck. Supralabials 7-8 the 2nd normally in contact with the prefrontal, the 3rd and 4th touching the eye. Anterior temporals 2, superposed. Anterior

sublinguals well developed and in contact with each other; the posterior pair ill developed and separated by scales. Usually no cuneates present between the infralabials. Scales subimbricate or juxtaposed, with a central tubercle or short keel, in 33-45 rows on the body in males and 39-55 in females, decreasing by 4 to 12 rows on the neck. Ventrals in male 209-260, in females 236-312; distinct throughout. Hemipenis is forked near the tip and complete organ bears spines of uniform size.

*Distribution* : From the Persian Gulf to China and the coast of New Guinea.

*Status* : Well distributed in throughout its range.

#### PERSIAN-GULF SEA SNAKE

##### 292. *Hydrophis lapemoides* (Gray 1849)

1849. *Aturia lapemoides* Gray, 1849, *Cat. Sn. Brit. Mus.*, : 46. (Ceylon, Madras; London).

1966. *Hydrophis lapemoides*, Minton, *Bull. Am. Mus. Nat. Hist.*, 134 : 146.

Total length is male 960 mm, tail 90 mm, female 925 mm, tail 70 mm. The color is, the young yellowish or whitish, with 33-43 blackish bands and the head black, with a yellow curved mark with its apex at the nostrills, extending backwards to the temporal shields. With age, the markings become paler and greenish and usually disappear completely on the ventral part of the body; the curved mark on the head may or may not persist. Besides the characters given in the generic key, temporals small, 2+3 or 3+3. Supralabials 8, the 2nd usually in contact with the prefrontal the 3rd and 4th, or the 3rd, 4th and 5th touching the eye, the last 3-4 small. A series of small scales at the oral margin after the 2nd infralabial. Posterior scales with a feeble tubercle or short central keel in the adult female; with a strong spinose tubercle in the adult male. Ventrals bicarinate, more than twice as broad as the adjacent dorsal scales anteriorly, narrower posteriorly. Hemipenis is like *H. Ornatus*. The juvenile in this species are slender, and the adult markedly robust, the young apparently attaining almost their full length before they add much to their girth.

*Distribution* : The Persian Gulf and coasts of India and Ceylon.

*Status* : A rare snake, known only from few examples.

#### BOMBAY SEA SNAKE

##### 293. *Hydrophis mamillaris* (Daudin 1803)

1803. *Anguis mamillaris* Daudin, *Hist. Nat. Rept.*, 7 : 340 (based on Russell, 1 : 49, pl. 44; Vizagapatam).

1943. *Hydrophis mamillaris*, Smith, *Fauna Brit. Ind.*, 3 : 462.

1966. *Hydrophis mamillaris*, Minton, *Bull. Am. Mus. Nat. Hist.*, 134 : 147.

The body of this snake reaches to a maximum length of 870 mm. in males and 895 mm. in females. Head is small, body slender anteriorly, much compressed posteriorly, the maximum diameter is about 3-4 times that of the neck; eyes are moderately large;

frontal as long as its distance to the rostral or the end of the snout; preocular is one; postoculars are 2; temporal scales are variable, generally 2-3 anterior superposed shields; supralabials are 7, second in contact with the prefrontal, 3rd and 4th touch the eye, last 3 are very small; infralabials are 4, in contact with the genials, both pairs of which are well develop; usually a small scale at the oral margin between 3rd and 4th infralabials; 25-29 scale-rows on the neck, 35-43 on the body (increase 10-15, the posterior scales are more or less hexagonal in shape, juxtaposed on feebly imbricate, with a central tubercle on short keel; ventral shields are 302-390, distinct throughout, bicarinate, not twice as broad as the adjacent scales; hemipenis forked near the tip and with spines of uniform size distributed throughout the organ. Dorsal colouration is yellowish or grayish, with 44-55 broad black bands on the body, almost two times broader than the interspaces between the bands; these bands expand dorsally and in most individuals connected along the line of the ventrals; head is completely black or with a yellow streak on the temporal region.

*Distribution* : India : Gujarat : Coastal area of Jamnagar district. The coasts of India and Pakistan (Gulf of Cambay, Bombay and Vizagaratnam; Las Bela).

*Habits and habitat* : Found in shallow sandy tide poos; with rocky substratum; also found in a mangrove creeks.

*Status* : This is a rare species.

### MANY TOOTHED SEA SNAKE

#### 294. *Hydrophis caeruleescens* (Shaw 1802)

1802. *Hydrus caeruleescens* Shaw, *Gen. Zool.*, **3** : 561 (Indian Ocean).

1943. *Hydrophis caeruleescens*, Smith, *Fauna Brit. Ind.*, **3** : 463.

1966. *Hydrophis caeruleescens*, Minton, *Bull. Am. Mus. Nat. Hist.*, **134** : 146-147.

This marine snake reaches to a maximum length of about 920 mm in males and slightly more than 800 mm in females. The species is having the following characters : the body is not much slender anteriorly, compressed in the posterior region, its greatest diameter being from 2-3 times that of the neck, head is moderately small; eyes are moderately large; frontal shield is generally shorter than its distance from the rostral; preocular one; generally one postocular is present, in few individuals 2 postoculars are available; 2 or 3 anterior temporal shields are present; supralabials are 7 or 8, the second is in contact with the prefrontal, the third and fourth touch the eye; infralabials are 4, in contact with the genials, the posterior pair is generally less developed and separated by the scales; 31-43 scale-rows on the neck, 38-54 on the body (increase 6-14), the posterior scales are subimbricate and with the truncated tips, all the scales are strongly keeled; ventral shields are 253-334, which are distinct on all parts of body. not two times broader than the adjoining dorsal scales; hemipenis is forked near the tip, is having longitudinal series of flattened and coarse papillae; the remaining portion of the hemipenis bears, moderately large, close set spines,

which are slightly larger at the basal part of the organ. Dorsal colouration is bluish-gray; with 40-60 broad bands, almost two times broader than the interspaces between at the anterior portion of the snake; these bands tapers towards the ventral portion, where they may be complete or incomplete on the thicker part of the body. In adult and aged individuals these markings become or scure and merge into uniform gray colouration; head is black in young, some individuals bear a curved mark but in adults the colour becomes dark gray, with or without a light stripe on the back side of the eye; ventrum is whitish with a yellow tinge.

*Distribution* : India : Gujarat : Coasts of Junagarh district. Coasts of Goa, Maharashtra Karnataka, Tamil Nadu, West Bengal.

*Elsewhere* : Burma coast, Gulf of Thailand, Straits of Malacca, Malayasia (Archipelago).

*Habits and habitat* : Inhabits the swampy area and in mangrove vegetation. It lives mainly on fishes and crustaceans. One gravid female example on ventral coast was found to be containing 7 large oval eggs in the oviduct measuring 21-35 mm. in length and 16-18 mm. in width.

*Status* : Common, throught its range.

#### GRAYISH-BLACK WHITE-BELLIED SEA SNAKE

##### 295. *Hydrophis fasciatus* (Schneider 1799)

1799. *Hydrus fasciatus* Schneider, *Hst. Amphib.*, 1 : 240 (East Indies; London).

1943. *Hydrophis fasciatus*, Smith, *Fauna Brit. Ind.*, 3 : 464.

The maximum length in male 1110 mm, tail 100 mm and in female 990 mm, tail 75 mm. The colouration is as follows : Head, neck, and anterior part of the body black to dark olive, with pale yellowish oval spots on the sides or connected as dorsal bars. Posteriorly, grayish above, whitish below, with dark rhomboidal spots which may extend down the sides of the body and form complete annuli in the young. Besides the characters given in the generic key, a single large anterior temporal succeeded by another scale as large or larger. A series of 2-4 small scales behind the parietals and between the posterior temporals. Supralabials 6 or 7 (rarely 5), the 3rd and 4th touching the eye, the last 1 or 2 very small. A small concate between the 3rd and 4th infralabials. Posterior scales subimbricate and more or less hexagonal, with a central tubercle or short keel, ventrals distinct throughout, not tiwce as broad as the adjacent scales, bicarinate. Hemipenis is forked near the tip; the complete organ bears spines which are long and slender and of almost uniform size.

*Distribution* : The coasts of India and Burma and the Straits of Malacca. Rare on the western coast of the Indian Peninsula, but common on the eastern coast from Madras northward to Sundarbans.

*Status* : A very common species in throughout its range.

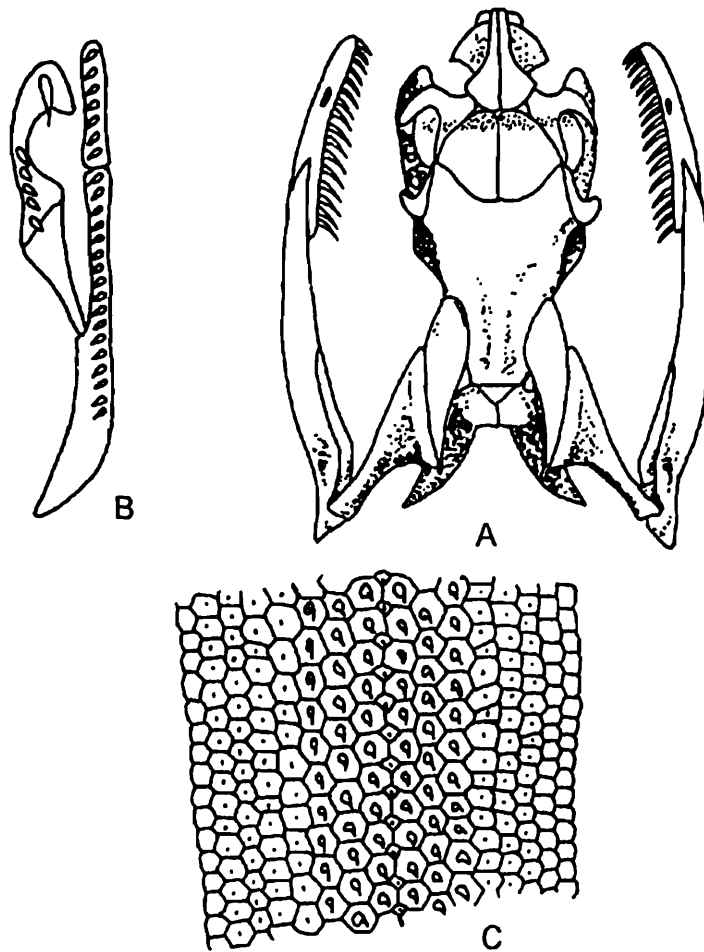
Genus 76. *Lapemis* Gray 1835  
(Text fig. 167)

1835. *Lapemis* Gray, *Illus. Ind. Zool.*, 2 : Col. pl. 87, fib. 2 (type *curtus*).

1943. *Lapemis*, Smith, *Fauna Brit. Ind.*, 3 : 468.

1966. *Lapemis*, Minton, *Bull. Am. Mus. Nat. Hist.*, 134 : 149.

This genus includes stout, short, deep-bodied marine-snakes having, ventral shield quite distinct in the anterior part. But small or missing in the posterior portion; dorsal body scales are squarish or hexagonal, juxtaposed, lowest 3-4 rows are larger than the others; maxillary bone extends almost to the palatine; poison fangs are followed after an interval by from 3-8 solid teeth; head shields are entire or the parietals may be divided; nostrils are superior in position; nasal shields are in contact with one another. This genus includes 2 species with a range from the coasts of complete Asia i.e. from Persian gulf to Japan, south to Sri Lanka and coastal areas of northern Australia. Only one species is available on the Indian coasts.



**Fig. 167.** *Lapemis hardwickii*. A. Dorsal view of skull, B. Palato-maxillary arch. C. Scales on belly.

## SHORT SEA SNAKE

296. *Lapemis curtus* (Shaw 1802)

1802. *Hydrus curtus* Shaw, *Gen. Zool.*, 3 : 562 (type loc. not known).

1943. *Lapemis curtus*, Smith, *Fauna Brit. Ind.*, 3 : 470.

1966. *Lapemis curtus*, Minton, *Bull. Am. Mus. Nat. Hist.*, 134 : 149-150.

The total length of this sea snake generally never exceeds 950 mm. Its body is short, stout, the diameter of the neck is generally half of more than half the diameter (greatest) of the body; eyes are moderately large; frontal shield is almost as long or a little shorter than its distance from the rostral; preocular is one; postocular are 1 or 2; anterior temporals are 2 or 3; supralabials 7, the second generally touches the prefrontal, the third and fourth touch the eye; parietal shields are broken into small shields; infralabials, 3-4 in contact with the genials which are in two pairs showing lot of variations, both the pairs of genials are separated by small scales; 28-31 scale rows on the neck in males, 31-35 in the females; 33-39 scales on the body of the males and 36-43 in females; the scales are hexagonal or squarish, the lower most rows are with a short central keel or tubercle, which in most adult males becomes strongly spinose; ventral shields are 154-168 in males, 160-194 in females, which are quite distinct in the anterior portion of the body, where they are broader than the adjacent dorsal scales, narrower or in many individuals are broken up into minute scales in the posterior region of the body; preanal shields are feebly enlarge; hemipenis is forked near the tip and with moderate sized, closely set spines evenly distributed on the complete organ, these spines are comparatively larger near the basal portion of the organ. Dorsal colouration is greenish or yellowish-olive, with 35-50 pale olive or dark-gray bars on the dorsum, which have tapering points on the lateral aspects; ventrum is whitish; some times these bars form complete bands around the body; in many individuals a narrow dark ventral stripe may be continued, in some cases a broad irregular band is available. In adults these bars merge with each other so as to form a uniformly coloured dorsum; head is pale olive to black, with or without yellow markings across the snout and along the side of the head.

*Distribution* : India : Gujarat : Coasts of Junagarh district; Coasts of Goa, Maharashtra, Tamil Nadu, Orissa and West Bengal.

*Elsewhere* : Coastal waters of Burma, Arabia, Iran, Sri Lanka and Mekran coast of Pakistan.

*Habits and habitat* : Inhabits the rocky coastal areas near the harbours. It lives on small fishes and crustaceans.

*Status* : It is quite common on the west coast of India but seems to be rare on the eastern coast.

Genus 77. *Microcephalophis* Lesson 1834

1834. *Microcephalophis* Lesson, in *Belang. Vov. Ind. Orient.*, : 320 (Type *gracilis*).

1943. *Microcephalophis*, Smith, *Fauna Brit. Ind.*, 3 : 472.

1966. *Microcephalophis*, Minton, *Bull. Am. Mus. Nat. Hist.*, 134 : 150.

This genus includes marine snakes with small head; long and slender neck; comparatively thick long body; ventral shields are entire in the anterior part but are divided by a median fissure in the posterior; maxillary bone extends forward as far as or a little further than the palatine; poison fangs are followed after an interval by 5 or 6 solid teeth; head shields are entire; nostrils are superior; nasals are in contact with one another; 30-36 hexagonal, juxtaposed scales round the thickest part of the body. The genus includes 2 species distributed in the coastal areas of Asia, from the Persian Gulf to southern China; Malaysia.

Key to the species of the Genus *Microcephalophis*

- I. Prefrontal not touching the 3rd supralabial; ventrals 220 to 350; the 1st and 2nd supralabials touching the nasal .....*gracilis*
- II. Prefrontal touching the 3rd supralabials; ventrals 404 to 468; the 1st, 2nd and 3rd supralabials touching the nasal .....*cantoris*

## COMMON SMALL-HEADED SEA SNAKE

297. *Microcephalophis gracilis* (Shaw 1802)

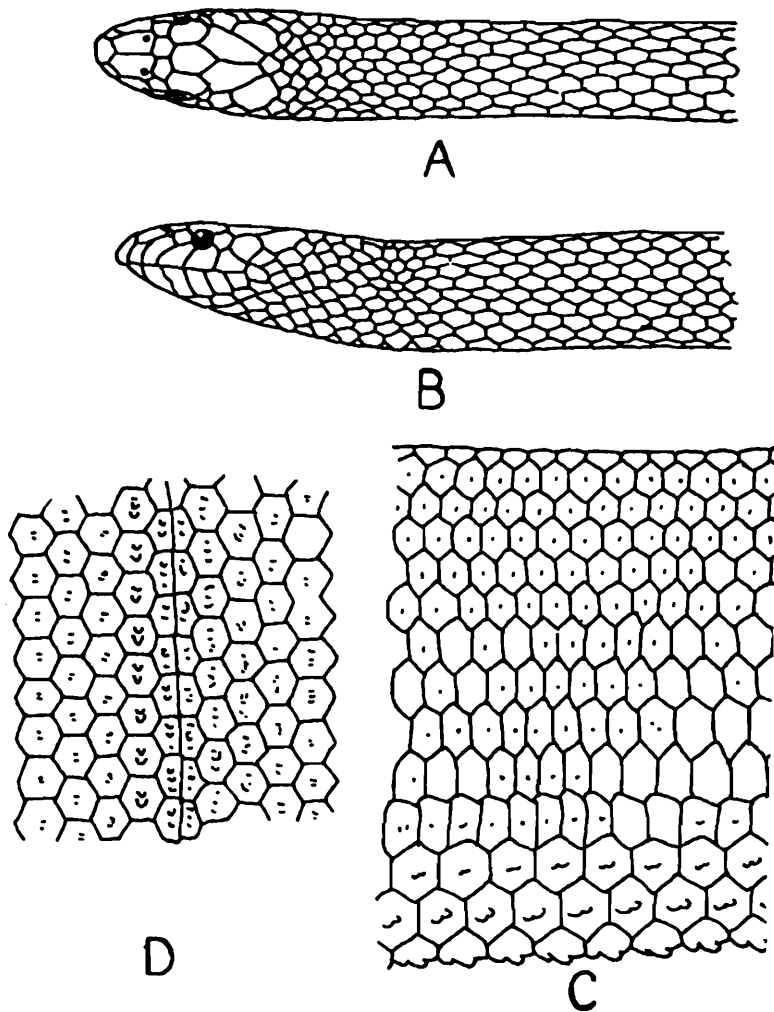
(Text figs. 168 & 169)

1802. *Hydrus gracilis* Shaw, *Gen. Zool.*, 3 : 560 (type loc. not known).

1943. *Microcephalophis gracilis*, Smith, *Fauna Brit. Ind.*, 3 : 472.

1966. *Microcephalophis gracilis*, Minton, *Bull. Am. Mus. Nat. Hist.*, 134 : 150.

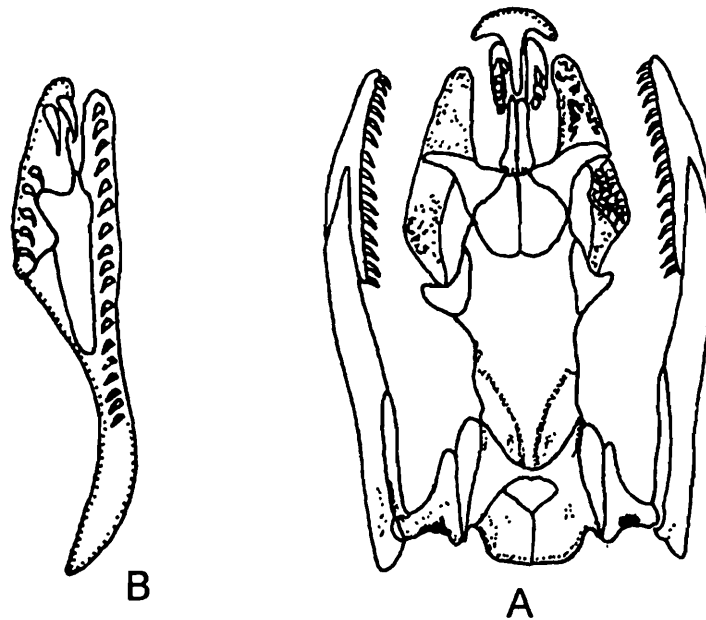
In this species the total length of males are about 1050 mm and females 1120 mm. The body is very long and most slender anteriorly and extremely compressed posteriorly, its greatest diameter between four to five times than the diameter of the neck; snout distinctly projects out, beyond the lower jaw; eyes are moderately large; head is very small in comparison to the body, it is some what elongated; rostral shield is quite large, as a result extends much no to the upper surface of the snout; frontal shield is small, usually shorter than its distance from the rostral; preocular is one; postocular one; anterior temporals 1+1; supralabials are 6, second touches the prefrontal, the third and fourth touch the eye; infralabials are 4 which are in contact with the genials; geneials are in 2 pairs, which are well developed and in contact with one another; small scales are not present on the oral margin of the mouth between the infralabials; 17-23 scale rows are present on the neck, 29-43 on the body (increase 12-16), the posterior body scales are hexagonal, juxtaposed, broader than long, with



**Fig. 168.** *Microcephalophis gracilis* Shaw. A. Dorsal pattern of head and neck, B. Lateral pattern of head and neck, C. Scalation at the thickest part of body D. Scales on the belly.

2-3 very small tubercles, one behind the other, the lower most rows of scales a little larger than the other and with very prominent tubercles or dental keels in adults; ventral shields are 212-360, these are entire on the anterior part of the body and broader than the adjoining dorsal scales, but in the posterior region these are completely divided by a median furrow, the two halves being opposed to one another and alternating; preanal shields are feebly enlarged; hemipenis forked near the tip; it is with spines all over, which are closely set and uniform in size. The dorsal colouration of young is blackish with a series of whitish dorsal bands or oval spots on lateral aspects on the slender portion of the body and posterior part is completely covered with 40-60 bands. In adult individuals these markings become dull and the whole dorsum looks grayish ventrum is paler; head is olivaceous or yellowish.

*Distribution* : India : Gujarat : Coastal areas or Bhavnagar district; Both western and eastern coasts of India.



**Fig. 169.** *Microcephalophis gracilis*. A. Dorsal view of skull, B. Palato-maxillary arch.

*Elsewhere* : From Persian Gulf to southern China and the coast of Australia; gulf of Thailand; from the coastal areas of Patani and Singgora; in southern China from the Straits of Hainan and Macao.

*Habits and habitat* : These marine snakes are most agile in water but become quite helpless on the ground. They are generally in mangrove swamps. This is viviparous and juveniles at the time of birth measure about 300 mm. in length. They live on fish and shrimps.

*Status* : It is common sea snake in throughout its range.

**CANTOR'S SMALL-HEADED SEA SNAKE**  
**298. *Microcephalophis cantoris* (Gunther 1864)**

1864. *Hydrophis cantoris* Gunther, *Rept. Brit. Ind.*, : 374 (Penang).

1943. *Microcephalophis cantoris*, Smith, *Fauna Brit. Ind.*, 3 : 475.

1966. *Microcephalophis cantoris*, Minton, *Bull. Am. Mus. Nat. Hist.*, 134 : 150-151.

This snake reaches to a length of about 1750 mm in males and 2020 mm in females. The body is long and very slender anteriorly, much compressed posteriorly, its greatest diameter being from 3-5 times that of the neck; snout projects out beyond the lower jaw; head very small and elongated; eyes are moderately large; rostral is large, extends well on the upper surface of the snout; frontal shield is small, generally shorter than the distance from the rostral; preocular is one; postocular is one; temporals are two (one single large and one posterior scale of the same size); supralabials are 6, all entire, the 2nd and 3rd, or 3rd only, in contact with the prefrontal, the third

and fourth touching the eye; infralabials are 4, in contact with the genials, which are in two pairs; both pairs of the genials are well developed and are in contact with one another; no small scales are present at the oral margin between the infralabials; 23-35 or sometimes 21 scale-rows are present on the neck, 41-48 on the body (increase 18-24), those on the thickest part of the body are juxtaposed, hexagonal, broader than long, the vertebral rows with two tubercles, one behind the other, the lower rows often with a bunch of 3 or 4 tubercles; ventral shields are from 404-468, which are entire on the slender anterior portion of the body and broader than the adjoining dorsal scales of body; on the posterior part, the dorsal body scales are almost divided by a median furrow, the two halves opposed to one another or alternating, each half with 2, 3 or 4 tubercles; preanal shields are feebly enlarged; hemipenis forked near the tip, bearing spines every where on the complete organ, which are closely set and of the similar size. Dorsal colouration is dark-olive or grayish anteriorly with yellow cross-bars or lateral spots; ventrum is yellowish with dark bands or bars which become dull on the advancement of age; in some individuals there remains a dark stripe along and ventrals; head is black in the juveniles but grayish or yellow with a greenish tinge in the adults.

*Distribution* : India : Gujarat : Coastal parts of Bhavnagar district; on western coast of India, recorded from Cannanore, Orissa coast.

*Elsewhere* : Sunderbans and Chittagong in Bangladesh, Pakistan (coastal parts near Karachi).

*Habits and habitat* : Found in muddy and sandy habitat. Snakes are docile and live on fishes and prawns.

*Status* : A common sea snake in its range.

#### Genus 78. *Astrotia* Fischer 1856

1856. *Astrotia* Fischer, *Abh. Naturw. Ver. Hamburg*, iii : 38 (type *schizopholis* = *stokest*).

1984. *Astrotia*, Mahendra, *Ann. Zool.*, 22 : 376.

Maxillary bone longer than the lower aspect of the ectopterygoid, not extending forwards as far as the palatine, which is curved outwards. Poison fangs followed after an interval by 6 or 7 teeth. Body short, stout, head large. Neck more than half the greatest diameter of the body. Head shields entire, regular. Nostrils superior. Nasal shields in contact with each other, with a suture reaching the 2nd supralabial. No loreal. Preocular 1. Postoculars 2 or 3. Anterior temporals 2 or 3. Supralabials 8-10, the 2nd, and sometimes the 3rd, in contact with the prefrontal, the 4th-6th usually touching the eye. No distinct sublingulas. Scales strongly imbricate, pointed, with a median bidentate keel in 47 to 59 rows of the body. A few anterior ventrals entire, the rest longitudinally divided. Anals 2, strongly enlarged.

A single species.

299. *Astrotia stokesi* (Gray 1846)

1846. *Hydrus stokesi* Gray, in Stoke's *Discov. Australi.*, I : 502, pl. 3. (Australian seas : London).

1984. *Astrotia stokesi*, Mahendra, *Ann. Zool.*, 22 : 377.

The most massive sea snake known, with a large head. Total length : Male 1200 mm; tail 170 mm; female 1600 mm; tail 190 mm.

Colour is yellowish or pale brown, with broad, more or less complete, black or dark brown bands, or with dorsal bars and ventral spots. Spots or narrow bars often present between the annuli. Head dark olivaceous to yellowish.

Characters as in the genus. Ventrals 226-286, a few anterior ones entire, the rest completely divided longitudinally, the two halves overlapping and with bifid or dentate tips. Hemipenis forked near the lip and completely spinose except near the base, where there are longitudinal folds.

*Habits and habitat* : It is reported that this species forms immense aggregations numbering thousands of individuals—a curious “line quite ten feet wide”, the course of which “we followed for some sixty miles”, composed of “a solid mass of sea-snakes, twisted thickly together” (Willoughby Love in “The Tail that is Always New”). Deraniyagala (1955, p. 83) notes that it is a slow swimmer, usually followed by small coprophagous carangoid fishes that keep directly under its vent.

*Distribution* : West coast of India; northern, western and southern coasts of Ceylon; east coast of Malaysia; Singapore; and northern coast of Australia.

Genus 79. *Pelamis* Daudin 1803

1803. *Pelamis* Daudin, *Hist. Nat. Rept.*, 7 : 361 (type *platurus*).

1943. *Pelamis*, Smith, *Fauna Brit. Ind.*, 3 : 475.

1966. *Pelamis*, Minton, *Bull. Am. Mus. Nat. Hist.*, 134 : 151.

The monotypic genus includes strongly pelagic species distributed widely in Indian and Pacific oceans. In these snakes maxillary bone never extend anteriorly beyond the palatine bone; poison fangs are followed after an interval of 7-11 teeth; head shields are entire; nostrils are in a superior position; nasal shields are in contact with one another; body is short, very stout, covered with squarish or hexagonal, juxtaposed scales, 49-67 round the thickest portion of the body; ventral shields are very small, divided by a median longitudinal furrow, in many individuals ventrals can not be distinguished from the joining body scales.

## PELAGIC SEA SNAKE

300. *Pelamis platurus* (Linnaeus 1766)

1766. *Anguis platurus* Linnaeus, *Syst. Nat. ed.*, 12 : 391 (type loc. not known).

1943. *Pelamis platurus*, Smith, *Fauna Brit. Ind.*, 3 : 476.

1966. *Pelamis platurus*, Minton, *Bull. Am. Mus. Nat. Hist.*

The length of this sea snake never exceeds 800 mm in males and 970 mm. in females. The body is much compressed, the maximum diameter posteriorly is generally more than two times that of the neck; head is narrow and snout is elongated; frontal shield is large, as long as its distance from the end of the snout; preoculars are 1 or 2; postoculars 2 or 3; temporals are small, generally 2 or 3 anterior ones; supralabials are 7 or 8, second is in contact with the prefrontal, fourth and fifth are below the eye, generally separated from it by suboculars; anterior pair of genials are usually distinct and separated by small scales; 49-67 scale-rows on the thickest portion of the body, the scales are hexagonal, or quadrangular in shape, the lower most rows with two or three small tubercles, which are strongest in grown up males; ventral shields are from 264-406, generally divided by a median longitudinal furrow or broken up in to minute scales, which can not be distinguished from the other body scales; preanal shields are moderately enlarged; hemipenis is forked near the tip, it is having spines every where except near the base of the penis, where there are longitudinal folds. Dorsal colouration is extremely variable, this may be black or lemon yellow, with black dorsal stripe; ventrum, top and side of the head are of the same colouration, chin is pigmented with dark; tail is with black and white bars or vermiculation.

*Distribution* : India : Gujarat : Coastal areas of Junagarh and Kachchha district. Complete coastal line on India.

*Elsewhere* : Persian Gulf to the cape of Good hope, eastward range extends to North Island, New Zealand, Possiet Bay, Kamchatka, Gulf of California to the Coasts of Equator.

*Habits and habitat* : Pelagic, swift swimmers; most docile and viviparous.

*Status* : Most common, throughout its range.

#### Family X. VIPERIDAE Bonaparte 1840

##### SOLENOGLYPHA

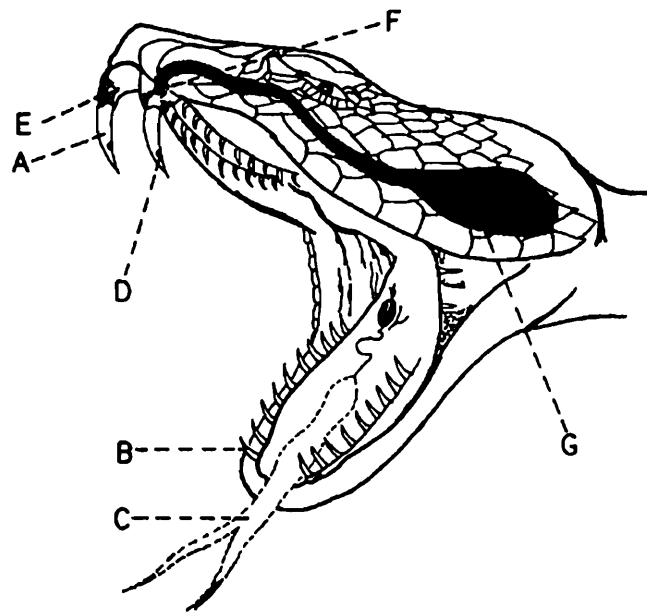
(Text fig. 170)

1840. *Viperidae* Bonaparte, *Mem. Ace. Torin*, (2)ii : 393.

1943. *Viperidae*, Smith, *Fauna Brit. Ind.*, 3 : 477.

1966. *Viperidae*, Minton, *Bull. Am. Mus. Nat. Hist.*, 134 : 156.

The family includes the snakes with the following characters : The maxilla is greatly shortened but become quite deep, bearing a single, large, erectile, tube like poison fang, which is greatly developed and carry poison; palatine, pterygoid and dentary bones are having much smaller backwardly recurved teeth; the channel for the conveyance of the venom is generally completely closed so that no external groove



**Fig. 170.** Fangs, poison gland, teeth and tongue of a viper. A. Fang, B. Curved teeth, C. Tongue, D. Orifice of fang, E. Sheath over fang, F. Poison duct at base of fang, G. Poison gland.

is visible on the tooth, when at rest the fangs lie horizontally in the mouth, and in no other position in fact could it be closed, usually there are two equally developed fangs, both of them function in biting. The erect-position is brought about by a forward movement of the other bones forming the palato-maxillary arch, the maxilla revolving like a hinge on the anterior end of the prefrontal. The quadrate is long and slender and extends backwards in an almost horizontal plane from the supratemporal. The coronoid is not present in the lower jaw. The long ectopterygoid is flexibly articulated with the maxilla and the pterygoid rendering a rotating movement to maxilla into a vertical position when the snake strikes. The pterygoid is also movably attached to the very long quadrate. The anterior skull bones are flexibly movable on the cranium; the premaxilla and maxilla are separate and same is the case with nasal and prefrontal bones; the supratemporal is generally freely movable on the cranium, while the long quadrate slants backward and this increase the gape of the jaws. There are no vestiges on the pelvis or hind-limb. Eyes are moderately large. The head is quite distinct from the neck. The dorsal scales are small, more or less rhomboidal in shape and overlapping; the ventral scales are transversely enlarged to form a single row and sometimes a double, especially in the tail region; the tail is of moderate length. In pit-vipers there is a deep pit between the eye and the nostril, which is heat sensitive. These snakes are viviparous and found in all sort of terrestrial habitats like forests, rocks, grainy areas, on trees and lead a effective arboreal life; few are mainly distributed in the old world, but are not available in Madagascar and Australia. Rattle snakes (*Crotalinae*) are found in North and South America and also in southern Asia. Family includes 14 genera and slightly more than 150 species.

### Key to the subfamilies of Family VIPERIDAE

- I. Without a deep depression; the loreal pit is between the eye and the nostril; maxillary bone not hollowed out ..... Subfamily VIPERINAE (True Vipers)
- II. With a loreal pit on each side of the snout, formed by the hollowing out of the maxillary bone ..... Subfamily CROTALINAE (Pit-vipers)

#### (i) Subfamily VIPERINAE

The True Vipers (Viperinae) are found only in Eurasia and Africa, and consist of 11 genera, of which five occur in the Indian subcontinent.

Some of them are oviparous, but most are viviparous. Rivalry between males is said to be keen during the mating season, and "they sometimes put on a spectacular performance called the dance of the adders" (Goin and Goin, 1962, pp. 14 and 309).

#### Key to the Genera of the Subfamily VIPERINAE

- I. Head is with large symmetrical shields; eye in contact with one or more supralabials ..... *Azemiops*
- II. Head with small scales above; eye not in contact with the supralabials.
  - A. Ventrals with strong lateral keel; subcaudals paired ..... *Eristocophis*
  - B. Ventrals without keels.
    1. Subcaudals single; keels of lateral scales serrated ..... *Echis*
    2. Subcaudals paired; keels of lateral scales without serration.
      - a. A horn-like appendage above the eye, nostril directed outward and upwards; a supranasal sac is present, opening into the upper part of the nostril .....  
..... *Pseudocerastes*
      - b. No horn-like appendage above the eye; nostril facing laterally; no supranasal sac  
..... *Vipera*

#### Genus 80. *Azemiops* Boulenger 1888

1888. *Azemiops* Boulenger, *Ann. Mus. Civ. Genova*, (2) vi, : 602 (type *fae*).

1984. *Azemiops*, Mahendra, *Ann. Zool.*, 22 : 330.

Fangs rather small. Body cylindrical, elongate. Head elliptical, covered with large shields. Snout squarish, broadly rounded. Nostril large, between two nasals, the posterior concave. Loreal present. Preoculars 2 or 3. Supralabials 6, the 3rd or the 3rd and 4th touching the eye. Scales in 17 : 17 : 15 rows, smooth. Ventrals rounded. Subcaudals paired, or the anterior ones single.

A single species.

## FEA'S VIPER

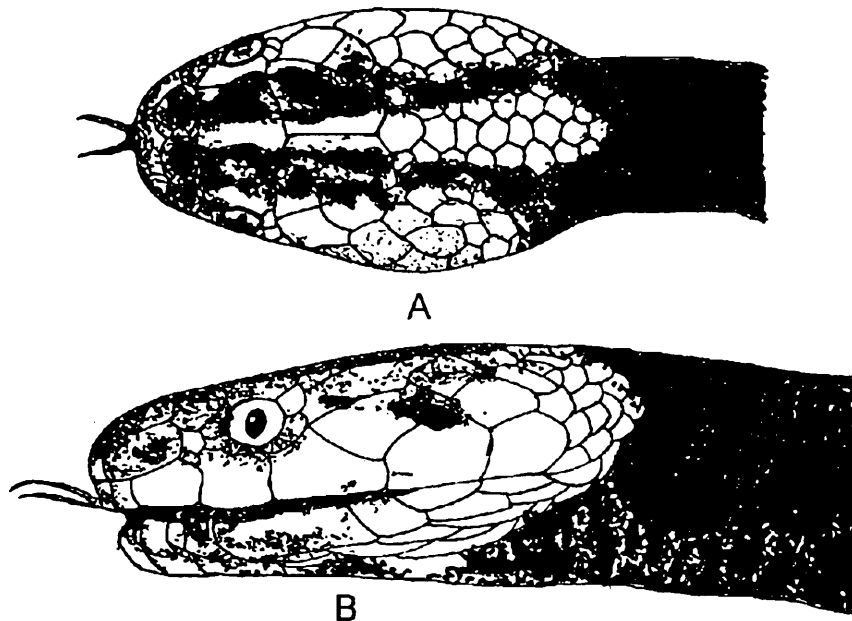
301. *Azemiops feae* Boulenger 1888

(Text fig. 171)

1888. *Azemiops feae* Boulenger, *Ann. Mus. Civ. Genova*, (2) vi : 602. (Kakhyen Hills, Burma : Genoa).

1984. *Azemiops feae*, Mahendra, *Ann. Zool.*, 22 : 330.

The maximum length of this viper reaches up to 770 mm, tail 130 mm. The dorsal colour is blackish with 14 or 15 narrow white (pink on life) cross-bands, entire or interrupted on the vertebral line, or alternating with one another on each side. Head and nape yellow, with a pair of dark brown longitudinal stripes starting from the prefrontals and passing back to meet the dark colour of the dorsum. Greenish-white below.



**Fig. 171.** *Azemiops feae*. A. Dorsal pattern of head and neck, B. Lateral pattern of head and neck.

The snout is broadly rounded and square-shaped; internasals almost equal to the prefrontals in length; frontal shield, three times broader than supraocular; loreal is square-shaped; preoculars 2; presubocular 1; postoculars 2; anterior temporals 2, the lower one is wedged between the 4th and 5th labials; supraoculars 6, 3rd, or 3rd and 4th touch the eye; genials are in two pairs, anterior genials are short, two times broader than the posterior pair, which are separated from one another by small scales; ventrals, 180-189; subcaudals, 42-53; anal 1. Hemipenis is bifurcating opposite the 4th to 6th subcaudal shield but extends up to the 10th or 11th caudal plate; the sulcus is single in each fork. The organ is longitudinally folded proximal to the bifurcation, but distal to the point of forking, it is first spinose and then calyculate,

the spinose area being about as extensive as the calyculate region. The lines of demarcation between the spinose and calyculate sections extends straight across the organ but is only moderately distinct. The spines are numerous and very variable in length, while the calyces have scalloped edges and are uniformly prominent throughout. The lips of the sulcus are prominent and bear small species in the spinose area but are calyculate in the calyculate region" (Pope). The specimen in the Paris from Tam-dae agrees well in hemipinal structure with the above description of the Pope except that the spines are large; there are 9 spines in the lateral series, and at the extreme base are 3 enormous ones.

*Distribution* : Upper Myanmar, Tong-Kong (Tam-dao, Ngan-son, Cao-bang); Southern China and South East Tibet.

*Status* : A common viper in the complete range.

#### Genus 81. *Vipera* Laurenti 1768

1768. *Vipera* Laurenti; *Syn. Rept.*, : 99 (type *redi=aspis*).

1943. *Vipera*, Smith, *Fauna Brit. Ind.*, 3 : 482.

1966. *Vipera*, Minton, *Bull. Am. Mus. Nat. Hist.*, 134 : 156.

This genus is generally palearctic and includes viviparous, deadly solenoglyphous (with large, hollow, fangs on maxilla-tip) snakes, distributed in complete Eurasia, the Indo-Australian Archipelago; ranging widely into tropical areas of Asia to Taiwan and Java; well distributed in North and Tropical Africa. About 10 species are available in Indian region.

The main characters : Head is distinct from the neck, covered with small scales or a small frontal and parietal shields are present; eyes are with vertically elliptical pupil, eyes are not in contact with the labials; there is no pit between the eye and the nostril; more than 3 head shields (scales) across top of head between the two eyes; nostril is lateral in position and pierced into a large nasal shield; a naso-rostral shield is present between the nasal and the rostral or partly united with the nasal; dorsal body scales are keeled; keels without serration, in straight rows of 19-33 scales round the body; ventral shields are rounded and smooth; sub-caudal shields are divided; tail is short.

#### Key to the species of Genus *Vipera*

- I. Scales in 27-33 rows at mid-body; three series of large spots down the back ...  
..... *russelli*
- II. Scales in 23-27 rows at mid-body; no large lateral spots ..... *lebetina*

## RUSSELL'S VIPER, DABOIA, TIC-POLONGA

302. *Vipera russelli* (Shaw 1797)

(Text fig. 172)

1797. *Coluber russelli* Shaw, *Nat. Misc.*, 8 : pl. 291 (based on Russell's figure).1966. *Vipera russelli*, Minton, *Bull. Am. Mus. Nat. Hist.*, 134 : 156.

Besides the characters given under genus, the species is characterized by having an obtuse snout with prominent canthus rostrails; nostril is very large, pierced in nasal, which is united below the naso-rostral; the both shields are separated above by the anterior end of the supranasal which is very narrow and crescentic in shape; scales on the top of head are small, imbricate, strongly keeled, 2 or 3 on a line across the tip of the snout, 6-9 scales between the supraoculars, which are very narrow; 2 scales are present between the nasal and the eye; 10-15 small scales are present around the eye; temporal scales are small, the lowermost row is largest and smooth, the upper rows are strongly keeled; supralabials are 10-12, fourth and fifth are largest, 3-4 rows of small scales are present between them and the eye; posterior genials are small, smaller or much smaller than the anterior genials, separated by small scales; scales in 25 to 29 : 27 : 33 : 21 to 23 rows, which are quite smooth; ventral shields in males and females are from 153-180; subcaudal shields in males

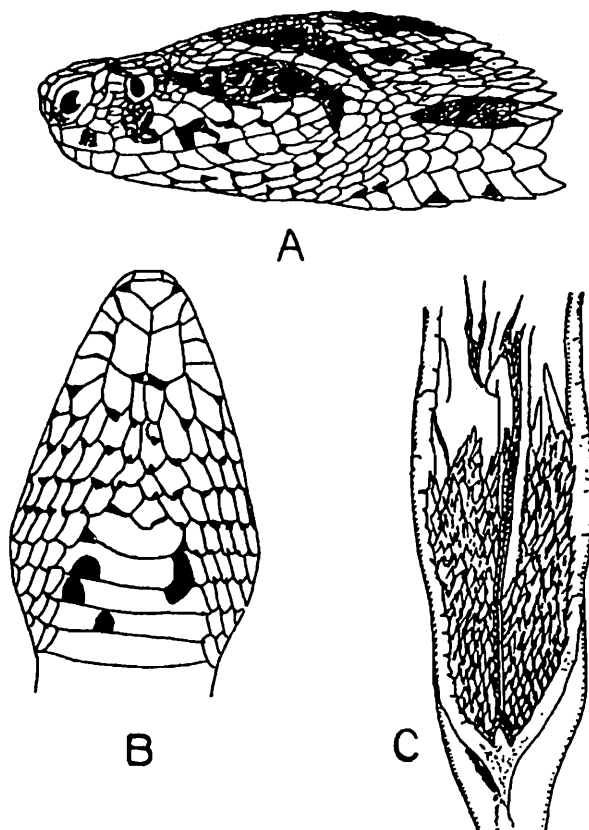


Fig. 172. *Vipera russelli* (Shaw). A. Dorsal pattern of head, B. Ventral pattern of head, C. Hemipenis.

and females are 41-64 and are paired; hemipenis extends up to 10th caudal plate; forked opposite the 2nd and 3rd caudal plate, calyculate in distal half, bearing spine in the proximal portion, the largest spines are present near and around the fork. Dorsal colouration is lightened to sandy, with a vertebral series of 23-29 large, oval, chestnut spots, with black or dark brown margins narrowly edged with cream colour, these spots generally fuse in most of the individuals; on lateral aspects also a series of similar spots are present, but these are comparatively smaller than the vertebral spots; under side of head is with two large dark spots; a light V-shaped mark with its apex on top of snout; labials and lateral aspects of snout spotted with brown and cream colour; ventrum is whitish with a pink tinge and is with black semilunar spots; chin and throat are whitish, but in many individuals the scales of this area are tipped with black.

*Distribution* : India : Gujarat : Surat, Vadodara, Gandhinagar, Dangs and Bharuch districts. Whole of India.

*Elsewhere* : Sri Lanka, Pakistan, Eastern Himalayas, Burma, Thailand and many parts of Indo-Chinese region.

*Habits and habitat* : Inhabits the plains, foothills and uplands up to 2500 meters, grasslands, cultivated fields, bushes near the marshy areas; these are generally nocturnal, sluggish, ill tempered. Food comprises small rodents and frogs. Young ones are born in June, the number generally remains between 20-25 in a single litre and they measure between 250-300 mm.

*Status* : Though the snake is available everywhere in its range, but nowhere common, the species is abundant in some areas, rare or missing in others.

#### LAVETINE VIPER

#### 303. *Vipera lebetina* (Linnaeus 1758)

1758. *Coluber lebetinus* Linn., 1758, *Syst. Nat.*, : 216 (Cyprus).

1966. *Vipera lebetina*, Minton, *Bull. Am. Mus. Nat. Hist.*, 134 : 157.

Total length of 1670 mm. Colour is "Dorsal ground color dusty khaki to buff, with minute darker punctuation; about 40 indistinct cross-bands of darker gray; belly buff, becoming white anteriorly, more or less heavily clouded with gray; tail pinkish brown" (Minton, 1966, p. 157). Head shorter and wider than in *Vipera russelli*. Supranasal shield not or scarcely crescentic in shape. Supraoculars usually divided. Scales in 23 to 27 rows at mid-body. Ventrals 162-179. Subcaudals 40-51, divided. Hemipenis is like *russelli*.

*Distribution* : From Cyprus and the Cyclades Islands to North Africa and east through the Near and Middle East to Kashmir, eastern Afghanistan, and northern Baluchistan.

*Status* : Widely distributed species.

Genus 82. *Echis* Merrem 1820

1820. *Echis* Merrem, *Tent. Synst. Amphib.*, : 149 (type *carinata*).

1943. *Echis*, Smith, *Fauna Brit. Ind.*, 3 : 487.

1966. *Echis*, Minton, *Bull. Am. Mus. Nat. Hist.*, 134 : 159.

This genus includes small vipers which have got a close similarity with the snakes of genus *Vipera* but their nostrils are small and dorsolateral in position, directed upward and outwards and situated in small nasal; head is very distinct from the neck, covered with small imbricate scales, eyes are moderately large, with vertical pupil; body scales are keeled, in 27-37 rows, dorsal body scales are arranged in strongly longitudinally oblique series; the lateral scales are smaller, oblique; pointing downwards, with heavy serrated keels; ventral shields are rounded; tail is quite short with undivided subcaudal shields. The range of this genus is from Africa, north of the Equator (southward to Ghana and Kenya); South-west Asia, Arabia, Russian Asia, India, Pakistan and Sri Lanka; it comprises 2 species, the one *Echis coloratus* is distributed in Arabia, Palestine and Egypt.

*Trimeresurus cantori* but in this species supraoculars are separated by 8-11 scales on a line between them; the subocular is separated from the supralabials by a single row of scales; the body scales are in 21 or 23 : 21 or 23 : 15 or 17 rows; ventrals 154-174; subcaudals 46-65, usually paired. Hemipenis is like *T. cantori*.

*Distribution* : India : The Nicobar Islands; Andamans.

## SAW-SCALED VIPER; PHOORSA

304. *Echis carinatus* (Schneider 1801)

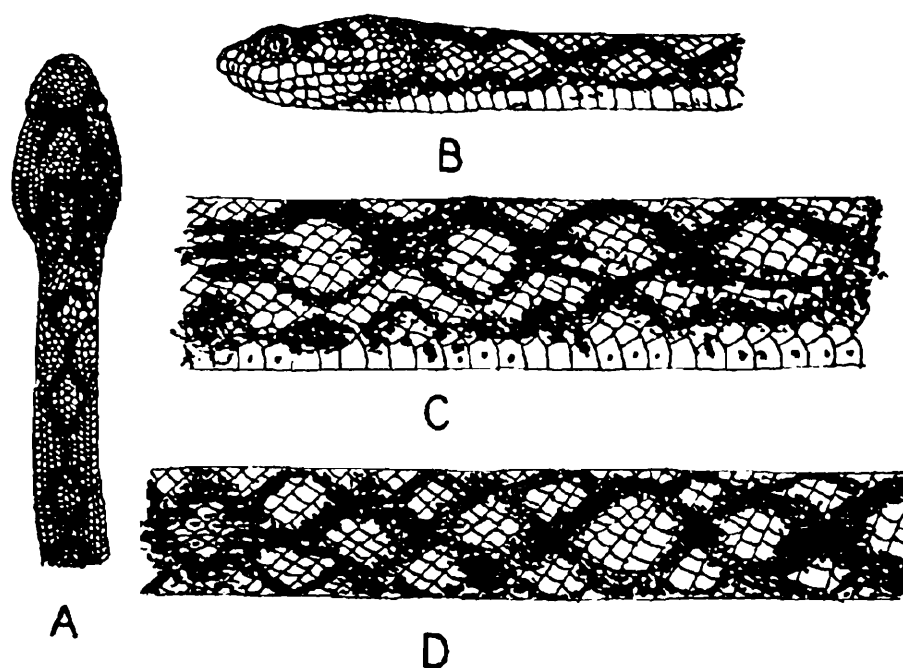
(Text figs. 173 & 174)

1796. *Ind. Serp. Russell*, 1 : pl. 2, (Arni).

1943. *Echis carinatus*, Smith, *Fauna Brit. Ind.*, 3 : 487.

1966. *Echis carinatus*, Minton, *Bull. Am. Mus. Nat. Hist.*, 134 : 159-160.

These small, pugnacious vipers reach to a maximum length of about 760 mm in males and females. In these snakes the head is short, quite distinct from the neck; snout is short and bluntly pointed, rounded when seen from above; rostral is about two times wider than high; nostrils are situated in divided nasal (divided completely into a large anterior and a small posterior part, the nostril is just perforated in front of the suture); eyes are large, its diameter is greater than its distance from the mouth, surrounded by 13-21 small scales, 1 or 2 upper scales are larger than the other; a pair of internasals are present, which are quite distinct and remain in contact with one another; scales on the top of the head are small, elongated, imbricate, strongly keeled, 8-12 on a line between the supraoculars, which are very narrow and often broken up; 10-15 scales are present in most of the individuals excluding the

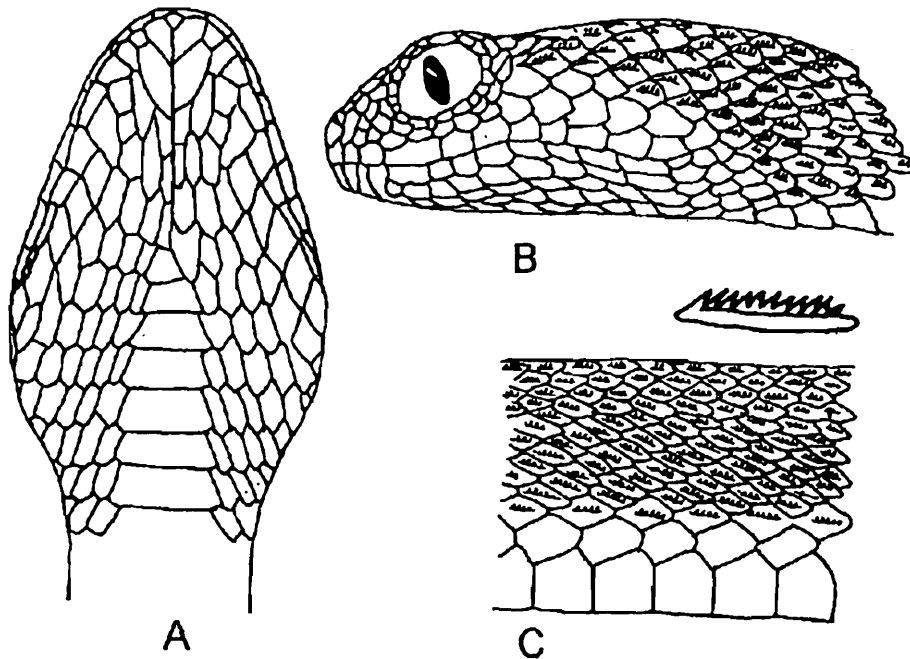


**Fig. 173.** *Echis carinatus*. A. Dorsal pattern of head and neck, B. Lateral pattern of head and neck, C. Lateral pattern of mid-body, D. Dorsal pattern of mid-body.

supraocular; 3-4 scales are present between the nasal and the eye; temporal scales are small, keeled except the lower most row; supralabials are 10-12, in most of the individuals fourth supralabial is usually the largest; 1-2 series of scales are present between them and the eye; anterior genial scales are most variable in size and are followed by 2-3 pairs of smaller shields; scales of the body are in 25-29 : 27-37 : 21 : 27 rows, two outer most rows are the largest, the oblique series is in 4-5 rows; ventral shields are from 132-185; subcaudal shields are from 23-39; hemipenis is deeply forked and bears spines all over. Dorsal colouration is from light buff or tan or olive-brown or chestnut; dorsum is with a median row of 28-36 whitish spots, with darker margins; lateral aspects are with narrow, undulating, white line; dorsal parts of loops are generally with more distinct than ventral; dorsal aspect of head is with light arrow head mark; a pale, but distinct stripe emerges from the zone of eye and reaches up to the angle of mouth; labials are with dark brown spots; ventrum is whitish with light pinkish brown stripes, which may be broken up, some individuals are stippled with dark gray; chin portion and throat is white.

**Distribution :** India : Gujarat : Bharuch, Bhavnagar, Jamnagar, Rajkot, Dangs, Panchmahals, Vadodara, Banaskantha, Surendranagar, Kachchha, Surat districts; available in Nirwand and Panchum Islands; Widely distributed in Andhra Pradesh, Goa, Maharashtra, Karnataka, Tamil Nadu, Rajasthan, Jammu & Kashmir.

**Elsewhere :** Arabia, Ghana, Kenya, Nigeria, Sri Lanka, Iran, whole of middle east, southern portion of Russia Asia, Pakistan and Iraq.



**Fig. 174.** *Echis carinatus* (Schneider). A. Ventral view of head, B. Lateral view of head, C. Scales of dorsal aspect.

*Habits and habitat* : Most adaptable snake available in a variety of habitats like, sandy, alluvial, rocky and semi-arid or arid environment with grass, herbs, shrubs, xerophytic and other vegetation; the species has been recorded from considerable high parts of its range; in certain circumstances this snake adapts in moist and areas with comparatively denser vegetation; it is mainly a nocturnal species but occasionally found during the day also in certain areas during the warmer season in search of food, which comprises amphibians, squirrels, mice, lizards, mudskipper (fishes), myriapods, insects and other arthropods. The snake is most pugnacious and ill tempered; breeding season starts in February and extends up to August. It produces from 9-14 young ones at a time in July or early August. At the time of birth young snakes measure from 150-160 mm. in length and are with brilliant colours.

*Status* : Most common throughout its range.

### Genus 83. *Pseudocerastes* Boulenger 1896

#### HORNED VIPER

1896. *Pseudocerastes* Boulenger, *Cat. Sn. Brit. Mus.*, iii : 501 (type *persicus*).

1984. *Pseudocerastes*, Mahendra, *Ann. Zool.*, 22 : 336

Marx and Rabb (1965) synonymized this genus with *Vipera*, but Minton (1966, pp. 157-158) did not agree with them, because *Pseudocerastes* differs "from *Vipera* in dorsolateral position of nostrils and presence of a deep and well-developed supranasal sac; dorsal scales with fine striations and keels do not reach the tip of scale but

terminate in small knob; supralabials with serrated lower margin and groove inside to receive lower lip; erect, horn like scale above eye; presence of scales between nasal and rostral and between nasal and first supralabial. The above-mentioned features plus evidence of distinctly different type of venom seem sufficient grounds for maintaining the genus." Mertens (1969, p. 83) agrees with Minton's view

Malcolm A. Smith (1943, p. 490) pointed out that the structure of the lips providing complete closure of the mouth and the valvular prominence within the nasal aperture are desert adaptations against the ingress of blowing.

A single species, *Pseudocerastes persicus*, is definitely known. Wall (Pois. Sn. Ind., 1913, p. 64), however, instituted another species, *Pseudocerastes bicornis*, on the basis of a head and about one-fourth anterior part of the body of a specimen killed by Major O.A. Smith at Khauri Kach, above Gwaleri Kolal in the Gomal Pass, Waziristan. There is little to distinguish it from *Pseudocerastes persicus*, except the alleged two horns above the eye, and the number (21) of scale-rows said to be at the mid-body, although the type specimen lacks the mid-body. The horns also are not beyond doubt, since they were described on hearsay. To quote Wall himself (1928, p. 64), "Supraoculars not or hardly enlarged, but two scales are somewhat elongated and free. These are now depressed, but Major Smith says in life they were erect, and formed the so-called 'horns' They are separated from the ocular ring by a row of scales. No other enlarged or modified shields above."

#### PERSIAN HORNED VIPER

##### 305. *Pseudocerastes persicus* (Dum & Bibr. 1854)

(Text fig. 175)

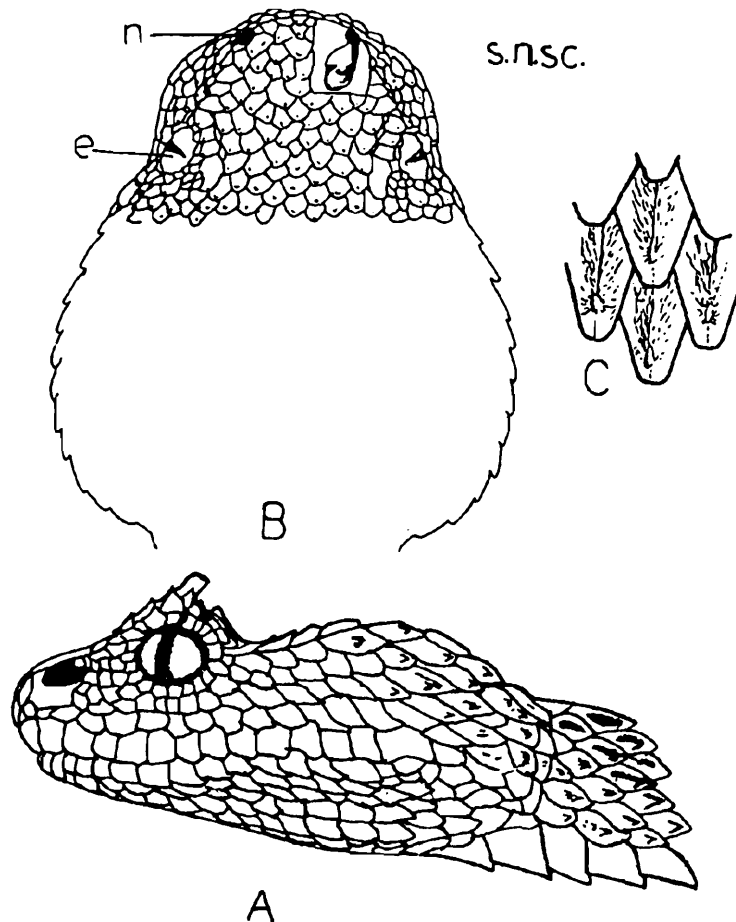
1854. *Cerastes persicus* Dum. & Bibr., *Erp. Gen.*, vii : 1443, pl. 78b.

1984. *Pseudocerastes persicus*, Mahendra, *Ann. Zool.*, 22 : 337.

The length of this horned viper reaches up to 890 mm, tail 110 mm.

Colour is pale grey or bluish grey to khaki, with rectangular blackish spots alternating with those in the adjacent rows; the median ones often more or less confluent to form short transverse bars. An ill-defined blackish broad streak from the eye to the gape, another less distinct, shorter band from the lore to the lip. Belly whitish with grey spots.

Head short, wide, very distinct from the neck. Snout blunt. Nostril very large, dorsolateral, in a large circular or crescentic nasal. Nasal separated from the rostral by small scales. Scales on top of the head small, imbricate, smooth on the snout, keeled behind in the young, tuberculate or more strongly keeled in the adult. An erect horn-like-scale above the eye surrounded by small scales. Supralabials 12-14, separated from the eye by 3 rows of scales. Scale in 23 or 25 rows at mid-body. Ventrals 145-158. Subcaudals 34-49, paired. Hemipenis is short and reach up to the 8th caudal plate, deeply forked, the distal end is calyculate, the remainder spinose, the largest spines being at the proximal end; sulcus lips also spinose.



**Fig. 175.** *Pseudocerastes persicus*. A. Lateral pattern of head and neck, B. Top of snout showing the supranasal sac exposed. C. Dorsal scales, e., eye; n., nasal; sn. sc., supranasal sac.

*Distribution* : Afganistan, Iran and Pakistan (Baluchistan).

*Status* : Common viper in many areas of its range. Jolly (1912) records that it is common in Chagai Tahsil, Baluchistan, at 5000 feet altitude.

#### Genus 84. *Eristocophis* Alcock & Finn 1896

1896. *Eristocophis mcMahonii* Alcock & Finn. *J.A.S. Bengal*, **LXV** : 564 (type mcMahonii).

1984. *Eristocophis mcMahonii*, Mahendra, *Ann. Zool.*, **22** : 331.

Head covered above with small scales. Rostral much broader than high, crescentic and deeply concave, surmounted on either side by a large wing-like scale. Nasal separated from the rostral by a greatly enlarged scale, and from the first supralabials by a small scale. Dorsal scales arranged in straight rows; the laterals slightly oblique, strongly keeled, the keels not serrated. Ventrals with lateral keels. Tail short, prehensile, with paired, smooth subcaudals.

A single species.

LEAF-NOSED VIPER, McMOHAN'S VIPER  
306. *Eristocophis mcmaihoni* Alcock & Finn 1896

(Text fig. 176)

1896. *Eristocophis mcmaihoni*, Alcock & Finn, *J. A. S. Bengal*, LXV : 564 (type : mcmaihoni).

1984. *Eristocophis mcmaihoni*, Mahendra, *Ann. Zool.*, 22 : 332.

The maximum length reaches up to 707 mm; tail 64 mm.

Colour : "Dorsal ground colour light tan to khaki; a series of 20-25 small, black lateral spots each surrounded partly or completely by group of smaller cream spots; young with a series of about 30 dark brown dorsal cross bands; all markings more distinct posteriorly; narrow whitish line from above eye to angle of mouth; top of head with scattered dark flecks; labials, throat and ventral surfaces white; base of tail with distinct cross bands, tip unmarked, yellowish" (Minton, 1966, p. 159).

Characters as in the genus. Scales in 23 to 27 rows at mid-body. Ventrals 132-143, with strong lateral keels. Subcaudals 26-32, paired. Anal undivided. Hemipenis not known.

*Distribution* : The desert basin region of north-western Baluchistan; adjacent Iran; parts of Afghanistan; and Pakistan.

*Habits and habitat* : Nocturnal, alert, and bad-tempered. They are restricted to sandy habitats, in which they bury themselves, leaving only the head exposed; hiss very loud and deep, particularly at night; feed on mice, which they retain their grip until they are dead or nearly so.

*Status* : A rare species.

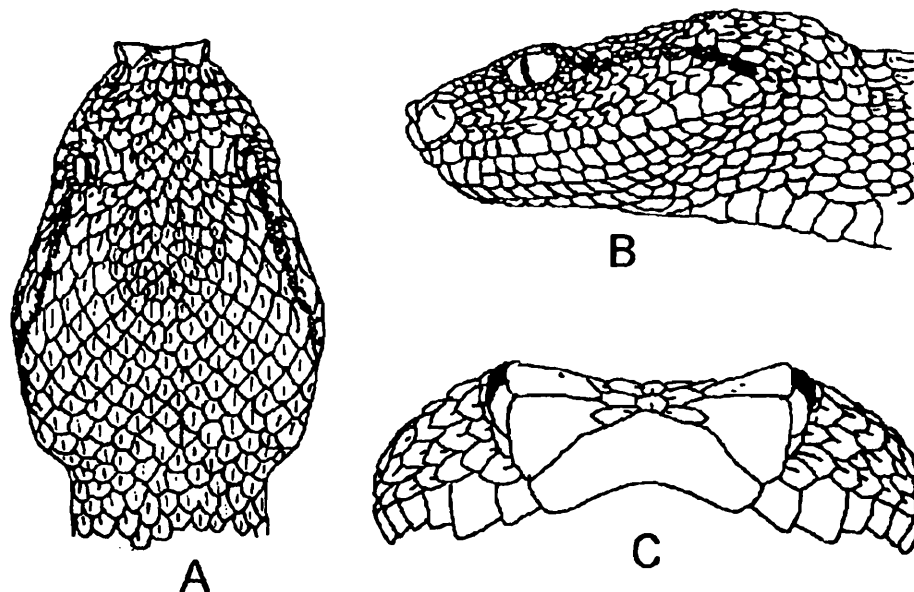


Fig. 176. *Eristocophis mcmaihoni*, A. Dorsal view of head, D. Lateral view of head, C. Frontal view of snout.

## (ii) Subfamily CROTALINAE

The Pit-Vipers (Crotalinae) range from eastern Europe across Asia to Japan; in the Indo-Australian Archipelago so far south as Timor; and in North, Central and South America, where they are most numerous, being represented by such dreaded forms as the rattle snakes, the American Bushmasters, and Fer-de-Lance. There are five genera, of which two occur in the subcontinent.

*Habits* : They are rather sluggish; mostly crepuscular and nocturnal; and feed mainly upon small mammals, lizards, frogs, and toads, Malcolm A. Smith (1943, pp. 479-480), who kept *Agkistrodon rhodostoma*, *Trimeresurus albolabris* and *T. popeorum* in captivity, observe : "They fed readily, but seldom saw them drink. Their chief food is mice, and their method of striking to kill was always the same. The aim was made for the middle of the back; so that the long fangs could be buried deeply in the abdominal cavity. The venom thus injected produced almost instantaneous death; after a few convulsive movements the victim lay still, and the hold was then relaxed .... The effects of the venom on human beings are well known. Pain, sometimes intense, at the seat of the bite, and swelling, often considerable, follows, but there is no constitutional disturbance. Deaths have been recorded, but they are extremely rare, and they appear to have been caused by septic conditions secondary to the bite. In the vast majority of cases the symptoms are not severe, and are quickly recovered from.

**Key to the Genera of the Subfamily CROTALINAE**

- I. Top of the head is with large symmetrical shields : a frontal bounded on each side by a supraocular and followed by a pair of parietals : internasals and prefrontals usually paired, in some cases broken into small scales ..... ***Agkistrodon***
- II. Frontal narrower than the supraoculars; snout turned up at the tip; ventral 138-157; hemipenis without spines ..... ***Hypnale***
- III. Head covered with small scales; frontal completely replaced by small scales except in *Trimeresurus macrolepis* in which a small frontal is discernible, preceded and followed by several scales ..... ***Trimeresurus***

**Genus 85. *Agkistrodon* Beauvois 1799**

1799. *Agkistrodon* Beauvois, *Tr. Amer. Phil. Soc.*, iv : 381 (type *mokasen*).

1966. *Agkistrodon*, Minton, *Bull. Am. Mus. Nat. Hist.*, 134 : 161.

Head distinct from the neck, with large symmetrical shields, those on the snout occasionally broken up into small scales. Nostril lateral. Eye with vertically elliptical pupil. Loreal pit present, between eye and the nostril, the loreal shield forming its anterior wall. Anal entire. Tail without rattle on its end. The genus is distributed in Central and south-eastern Asia; the eastern and central United States, and Middle America.

### Key to the species of the Genus *Agkistrodon*

Scales in 21 to 23 rows at mid-body; top of the head with enlarged shields, the prefrontal and internasal shields distinct and in pairs.

- I. Scales strongly keeled posterior labials fused with the temporals .....  
 ..... *himalayanus*
- II. Scales smooth; labials not fused with the temporals ..... *rhodostoma*

#### HIMALAYAN PIT VIPER

#### 307. *Agkistrodon himalayanus* (Gunther 1864) (Text fig. 177)

1864. *Hyls himalayanus* Gunther, *Rept. Brit. Ind.*, : 393, pl. 24, fig. A (Garhwal, W. Himalayas; London).

1966. *Agkistrodon himalayanus*, Minton, *Bull. Am. Mus. Nat. Hist.*, 134 : 161-162.

The maximum length of the snake in males reaches up to 600 mm, tail 95 mm and in females 600 mm, tail 80 mm. The maximum recorded length is 864 mm by Stoliczka. The dorsal colour is brown, with dark-brown or black spots or wavy cross-bars (sometimes quite faint); these spots in certain snakes confluent to form a festoon on each side of the vertebral line; the interspaces between the cross-bars sometimes whitish; a dark temporal stripe from the eye to the angle of the mouth which in individuals extends up to neck; upper lip is light-brown with dark spots; ventrum is

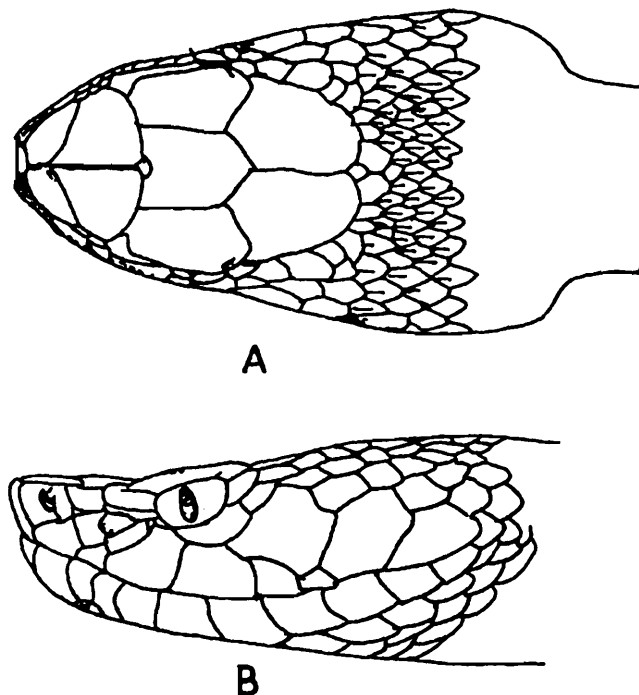


Fig. 177. *Agkistrodon himalayanus* (Gunther). A. Dorsal aspect of head, B. Lateral aspect of head.

brown, uniform or speckled with black and white. Snout is not pointed, is with large paired internasals and prefrontals; supralabials 5-8, the last two are united with temporals; body scales are strongly keeled, in 21-23 rows at the mid-body; ventrals 147-175; subcaudals 32-52, divided. Hemipenis extends up to the 6th to 10th caudal plate, forked opposite 3rd-6th caudal plates; the extreme tip is calyculate, the remaining part of the organ is with spines which are small at the distal end but very large and fewer at the bifurcation; some of the spines extend beyond the fork; sulcus lips are most prominent.

*Distribution* : The western Himalays from Chitral (Pakistan) to Sikkim; Kashmir; Eastern Himalayas; Assam (Khasi Hills).

*Habits and habitat* : The most favourite habitat of this viper is hilly terrain between 7000-10000 feet altitude. In Kashmir it has been noticed most comfortable at an altitude of 12000 feet even; a specimen was captured at the feet of the Dharmasala Glacier, W. Himalayas, at an altitude of 16000 feet. The snake is most timid and docile, even on provocation never makes an attempt to bite. According to Wall it gives birth to 5-7 young at a time.

*Status* : Very common in its western range.

#### MALAYAN PIT-VIPER

#### 308. *Agkistrodon rhodostoma* (Boie 1827)

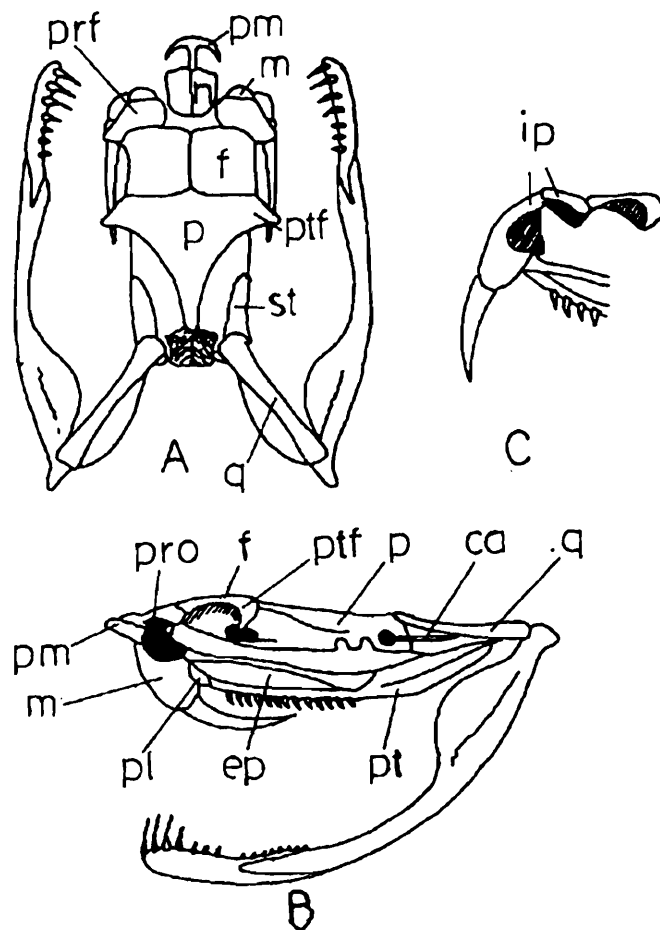
(Text fig. 178)

1827. *Trigonocephalus rhodostoma* Boie, *Isis*, : 561 (Java).

1930. *Agkistrodon rhodostoma*, Cochran, *Proc. U.S. Nat. Mus.* IXvii, Art. II, : 37.

1943. *Ancistrodon rhodostoma*, Smith, *Fauna Brit. Ind. Rept.*, 3 : 497.

The maximum length reaches up to 670 mm, tail 125 mm in males and 870 mm, tail 105 mm in females. Dorsal colouration is reddish, pinkish or greyish-brown, flecked with brown, and with large, subtriangular, dark brown spots edged with black, usually alternating with one another on either side of a dark vertebral line; a broad dark brown, black-edged stripe, is present in a chain-like fashion on ventral aspect, from the eye to the angle of the mouth; a light stripe above it extends along the side of the head above the eye to the tip of the snout; this is well marked in the young but may be absent in the adult; dirty whitish below, more or less thickly powdered or spotted with brown. Iris is golden, veined with black. Snout is pointed, somewhat turned up at the end; internasals longer than broad, much smaller than the prefrontals; posterior nasal elongate, pointed behind, more or less united with the nasal; canthal shield just reaching the upper surface of the head; 2 anterior temporals, the lower larger than the upper; scales smooth, in 21 : 21, rarely 19 : 17 or 15 rows; ventrals, male : 148-154, females : 156-166; subcaudals, male : 45-52, female : 35-46, paired. Hemipenis extends up to the 16th-20th caudal plate, forked opposite the third; spinose in the proximal 1/3 of its area, the largest spines being those distal to



**Fig. 178.** *Agkistrodon rhodostoma*. A. Dorsal view of skull, B. Lateral view of skull, C. Maxilla erect, showing the position of the bones forming the loreal pit. Ca., Columella auris (or stapes); ep., ectopterygoid (or transpalatines); f., frontal; l.p., loreal pit; m., maxilla; n., nasal; p., parietal; pl., palatine; pm., premaxilla; prf., prefrontal; pt., pterygoid; ptf., post-frontal; q., quadrate; st., supratemporal.

the fork; the remainder of the organ is finely flounced except near the extreme tip, where it becomes calyculate; sulcus lips are very prominent.

*Distribution* : Myanmar (Tenasserim, Southern Burma); Thailand; Cochin-China; S. Anam; Malaysia (main land as well as Peninsula) also other parts of Malayan subregion; Tong-king.

*Habits and habitat* : Inhabits the forest or wooded parts at low altitude, prefers the localities which are near the sea. This is a most pugnacious, ill tempered and fierce snake and bites readily even on the slightest provocation. According to Smith 1943 "Two females in Bangkok laid 13 and 30 eggs on August 1st and September 1st, and guarded them until the young were born, 42 and 47 days later. Development was already well advanced when the eggs were laid. They measured approximately 32 × 30 mm, and the young when born were 150-160 mm in length.

*Status* : It is common snake in many parts of its range, particularly in localities near the sea.

Genus 86. *Hypnale* Fitzinger 1843

## HUMP-NOSED VIPER

Scales in 17 rows at mid-body; no proper internasals or prefrontal; upper surface of the snout covered with more or less irregular scales; ventrals 138-157; hemipenis devoid of spines ..... *hypnale*

Frontal almost as broad as the supraocular along a line connecting the centers of the eyes; snout with a distinct hump at the middle of its tip, the hump covered with minute scales ventrals 116-138; hemipenis with spines ..... *nepa*

309. *Hypnale hypnale* (Merrem 1820)

1820. *Cophias hypnale* Merrem, *Syst. Amph.*, : 155.

1943. *Agkistrodon hypnale*, Smith, *Fauna Brit. Ind.*, 3 : 499.

The maximum length in males 330 mm, tail 55 mm, and in females 480 mm, tail 65 mm. The colour is grayish or brownish of various shades and mottlings. A series of ovate dark coastal spots almost always present. Tip of the tail often yellowish or reddish. Snout acutely pointed and turned up at the end. No proper internasals or prefrontals; the top of the snout being covered with more or less irregular scales, the extreme tip sometimes with minute scales. Frontal decidedly narrower than the supraocular shield. Scales feebly enlarged, in 17 : 17 : 17 or 15 rows. Ventrals 138-157, subcaudals 32-46, paired, or some of them single. Hemipenis without spines, it extends up to the 15th caudal plate; forked opposite 3rd to 4th caudal plate; the major part of the organ is closely flounced except near the bifurcation, where it is almost smooth; sulcus lips are prominent.

*Habits and habitat* : Terrestrial and arboreal, ascending low bushes. Viviparous, producing 4-10 young. Feeds on skinks and small lizards. The young, on noticing a prey, protrudes its tail from the coils and wriggles it about, mimicking very active earthworms and thus enticing the prey into its reach. When grown up, it would spring on the prey as soon as it came within reach and seize it (Henry, 1925).

*Distribution* : Ceylon and the Western Ghats as far as north as latitude 16°

*Status* : A common snake, throughout the range.

## CEYLON HUMP-NOSED VIPER

310. *Hypnale nepa* (Laurenti 1768)

(Text fig. 179)

1768. *Coluber nepa* Laurenti, *Syn. Rept.*, : 97 (based on Seba, pl. 19, fig. 7; "Madagascar").

1864. *Hypnale nepa*, Gunther, *Rept. Brit. Ind.*, : 394 (in part).

This small viper hardly reaches up to 380 mm. in length including the tail. Dorsal colouration is greyish or brownish, heavily mottled with dark brown; a series of large,

dark, angular, some what oblong spots on lateral aspects of the mid-line, some times alternating with those the otherwise; in certain individuals a series of lateral spots are available, ventrum is greyish, yellowish or brownish, more or less densely spotted with brown; top of head dark brown; a post-ocular stripe of dark brown colour is present. In general character it is similar to *Hypnale hypnale* except that no proper internasals or prefrontals are present; snout covered with more or less irregular scales; its extreme tip with a distinct hump or projection, covered with minute scales. This projection is present at the middle portion and not occupying the whole area of the tip as available in *Hypnale hypnale* scales are 17 : 17 : 17 rows; ventrals male : 116-133, female 121-138; subcaudals : male : 116-133, female 121-138; subcaudals : male : 28-40, female 27-34. Hemipenis extends up to the 9th-12th caudal plate, forked opposite the 3rd caudal plate; the proximal part of the organ is opinoise, the largest spines being distal to the bifurcation; the distal end is calyculate, the intervening area is flounced; the lips of the sulcus are devoid of spines.

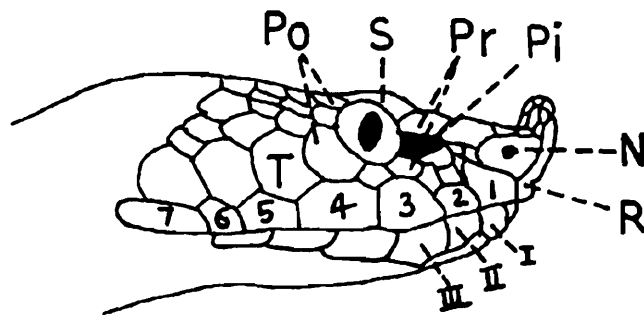


Fig. 179. *Hypnale nepa*. Lateral view of head showing the loreal pit between the preoculars. N., nasal, po., postoculars; Pr., preoculars; R., rostral; S., supraocular; T., temporal; 1-7, first to seventh supralabials; I-III, first to third infralabials.

*Distribution* : Sri Lanka (Hakgalla, Kandy, Ambewela and Mudulkele).

*Status* : Very common snake in its complete range.

#### PIT VIPERS

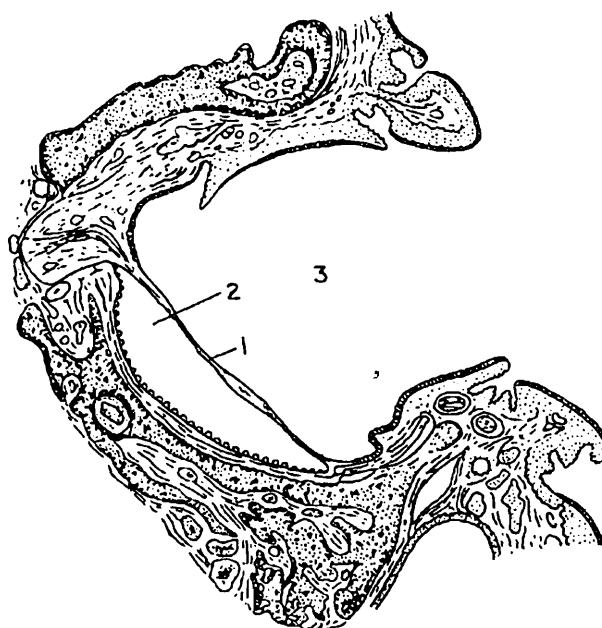
Genus 87. *Trimeresurus* Lacepede 1804

(Text fig. 180)

1804. *Trimeresurus* Lacepede, *Ann. Mus. Paris*, 4 : 209 (type *viridis*).

1943. *Trimeresurus*, Smith, *Fauna Brit. Ind.*, 3 : 502.

This genus which comprises more than 22 species is distributed in India, Vietnam, China, Japan, Malaysia, Indo-Australian archipelago as far as Timor, the Philippine Islands and Celebes. The genus includes pit vipers with head is well demarcated from the neck; nostrils are small and pierced in nasal shield, eyes are moderately large, with vertical pupil; second supralabial is united with the loreal and form the anterior wall of loreal pit; upper surface of head is covered with small scales or larger shields;



**Fig 180.** Section through sensory pit of snake. 1. Pit membrane, 2. Inner chamber of pit, 3. Outer chamber of pit.

2 or 3 postoculars are present, a deep pit is present on the lateral aspect of the face, between the preoculars and the loreal; a pair of large anterior genials is available, generally posterior pair is not present; scales of the body are in 17-31 rows; ventral shields are rounded; tail is moderately large or short; subcaudal shields are paired or in certain species, in rare cases are single; anal shield is not divided.

*Range* : South-eastern Asia : The Indo-Australian archipelago; the Philippine Islands; Celebes; and (if *Bothrops* is not regarded as a separate genus) South America.

#### Key to the species of the Genus *Trimeresurus*

- I. Upper head scales very large, shield like; scales in 12 to 16 rows at mid-body ..... *macrolepis*
- II. Head covered with small scales.
  - A. Supraoculars divided into 2 or 3 pieces by transverse sutures, or their margins indented by the adjacent scales.
    - a. 3-6 scales on a line between the supraoculars; scales in 17 to 19 rows at two head-lengths behind the head and at mid-body; subocular in contact with the 3rd and 4th supralabials; last ventral shield usually notched or divided; into two ..... *trigonocephalus*
    - b. 7-9 scales on a line between the supraoculars; scales in 21 (rarely 19) rows at mid-body; supraocular separated from the supralabials by a series of scales.... *malabaricus*

- B. Supraoculars not divided
- a. The scale forming the anterior border of the loreal pit distinct from the 2nd supralabial ..... *strigatus*
  - b. 2nd supralabial with a furrow in its upper part directed into the loreal pit.
    1. Many small subocular scales ..... *monticola*
    2. An elongated subocular shield
      - a. First supralabial entirely separated by a suture from the nasal.
        1. 1-3 enlarged scales between the supraocular and the internasal.
      - a. Head black above with a pattern of yellow lines; 7 or 8 supralabial; 8-10 scales in a line between the supraoculars.
        - i. Scales in 21 (rarely 23) rows at mid-body; ventrals 164-193 ..... *jerdonii*
        - ii. Scales in 25 rows at mid-body; ventrals 201-212 ..... *kauibacki*
      - b. Head brown above, with no pattern of yellow lines; 9-11 supralabials; 14-16 scales on a line between the supraoculars; ventrals 200-218 ..... *mucrosquamatus*
    2. No enlarged scale between the internasal and the supraocular; head green above; ventrals 145-177.
      - a. Dorsal scales smooth or nearly so; temporal scales small and smooth; 2 rows of scales between the subocular and the supralabials ..... *gramineus*
      - b. Dorsal scales keeled, temporal scales small and keeled; a single series of scales between the subocular and the supralabials.
        - i. Hemipenis without spines ..... *popeorum*
        - ii. Hemipenis spinose ..... *stejnegeri*
  - b. First supralabial partly or entirely united with the nasal.
    - a. Head brown or olivaceous, not uniform green above; 29 scale-rows at mid-body ..... *purpuroamaculatus*
    - b. Head uniform green above; scales in 21 (rarely 19) 23 or 25 rows at mid-body ..... *erythrurus*

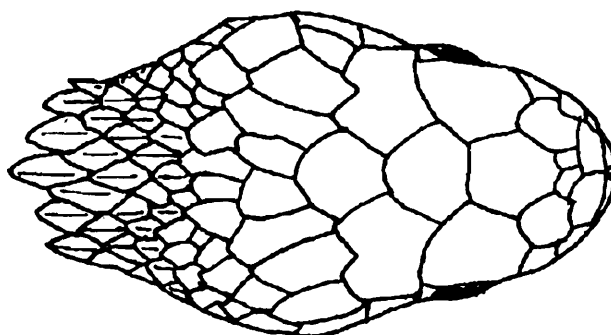
#### SOUTH INDIAN PIT-VIPER

#### 311. *Trimeresurus macrolepis* Beddome 1862

(Text fig. 181)

1862. *Trimeresurus macrolepis* Beddome 1862, *Madras Quart. J. Med. Sci.*, 5 : 2, pl. 2, fig. 6. (Anaimalai Hills, S. India; London)
1943. *Trimeresurus macrolepis*, Smith, *Fauna Brit. Ind.*, 3 : 505.

The maximum length in males 475 mm, tail 110 mm, and in females 580 mm, tail 115 mm. The dorsal colouration is bright green; ventrum is paler; the interstitial skin is blackish; a well defined whitish or yellow line is present along the flanks; upper lips are pale-green; a black postocular stripe may be present or absent. Head is covered above with very large, smooth, strongly imbricate scales; snout two times longer than the diameter of the eye; supraocular shields are very large separated from each other by two large scales one behind the other, in some individuals are with a smaller scale on each side; supralabials 7-8, the first supralabial is completely separated from the nasal shields; body scales in 17 : 12-16 : 9-10 rows of strongly imbricate and keeled scales; the scales on the last row along the body are smaller than of the other rows; ventrals 133-144; subcaudals 44-58, paired; anal 1; tail is prehensile. Hemipenis extends up to the 20th or 21st caudal plate; forked opposite the 5th plate; complete organ is calyculate, the calyces become smaller towards the proximal part; sulcus is prominent; the organ is devoid of spines.



**Fig. 181.** *Trimeresurus macrolepis* Beddome. Dorsal view of head.

*Distribution* : India : South India : Nilgiri Hills; Palni Hills; Shevaroy Hills, Anaimalai Hills and Nellampati Hills; Kerala (Hilly areas near Trivandrum).

*Habits and habitat* : It is an arboreal snake; feeds on lizards and other small vertebrates; inhabits hilly areas between 2000-7000 feet altitude.

*Status* : A common snake in throughout its range.

**312. *Trimeresurus trigonocephalus* (Sonn. & Latr. 1801)**  
(Text fig. 182)

1801. *Vipera trigonocephala* Sonn. & Latr., *Hist. Rept.*, **iii** (based on Seba, ii, pl. 36, no. 2 "I. Eustace").

1984. *Trimeresurus trigonocephalus*, Mahendra, *Ann. Zool.*, **22** : 351.

The maximum body length in male 620 mm, tail 110 mm, in female 835 mm; tail 130 mm. This is a foliage-green coloured species, uniform or with black blotchings. A black streak behind the eye and usually black symmetrical markings on the head. Belly uniform greenish or yellowish.

Head covered with small, unequal, imbricate scales. Supraoculars large, each divided into two or rarely three parts, with 3-6 scales on a line between them. Internasals very large, subquadrangular, in contact with each other; supralabials 9-10, the first completely separate from the nasal; the 3rd and 4th separated from the eye by the lower preocular and an elongate subocular. Scales 17-19 : 17-19 : 13-15 rows, strongly imbricate, smooth or faintly keeled. Ventrals 142-170. Tail prehensile; subcaudals 53-69. Hemipenis extends up to the 12th caudal plate, forked at the junction of the proximal third and distal two-thirds. The extreme tip and area adjacent to the sulcus are calyculate, the remainder portion of the organ bears spines, the spines increase in size as they approach the bifurcation.

*Distribution* : Hill districts of Sri Lanka.

*Habits and habitat* : This is generally nocturnal but often seen during day also, accounting its arboreal habits. Its food comprises tree frogs, lizards, birds and mice. When it is about to strike, it grips branch with its tail, draws itself in a sinuous curve, hisses and then lashes out. It is said to be ovo-viviparous; wall records two females; one contained 5 young, the other 26, slightly prior to birth.

*Status* : Quite common.

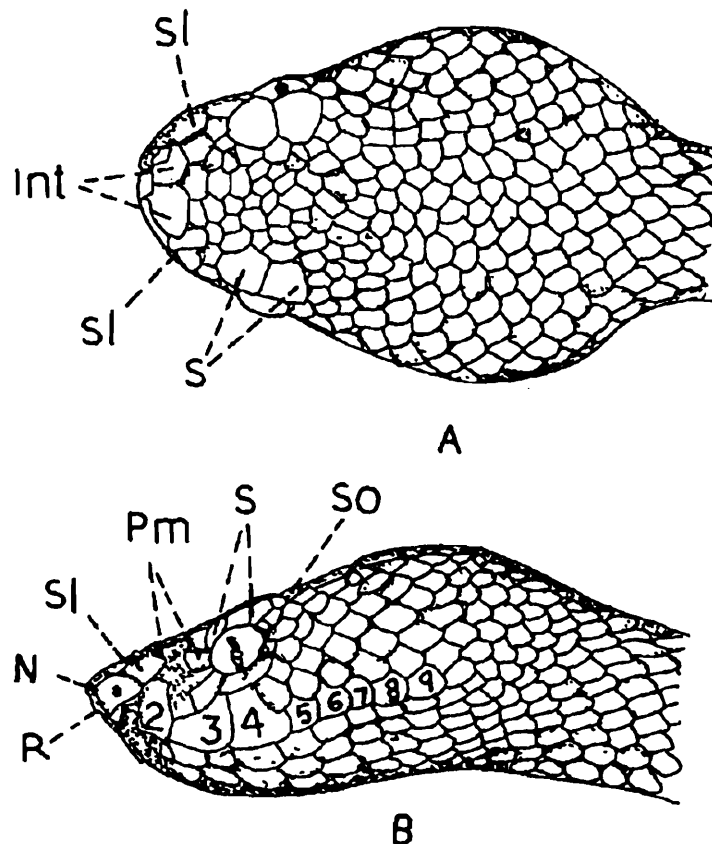


Fig. 182. *Trimeresurus trigonocephalus*. A. Dorsal view of head, B. Lateral view of head, int., internasal; N., nasal; Pratylenchidae., preoculars; R., rostral; S., supraoculars; So., subocular; sl., supraloreal; 1-9, 1st to ninth supralabials.

## EAST INDIAN OLIVE-BROWN PIT-VIPER

313. *Trimeresurus mucrosquamatus* (Cantor 1839)

1839. *Triganocephalus mucrosquamatus* Cantor, *P.Z.S.*, : 32, drawing in Bodleian Library, Oxford no. 18 (Naga Hills, Assam).

1943. *Trimeresurus mucrosquamatus*, Smith, *Fauna Brit. Ind.*, 3 : 507.

The maximum length 1120 mm, tail 195 mm, in males and 1160 mm, tail 205 mm, in females. The colour is grayish or olive-brown above, with a dorsal series of large, brown, dark edged, irregularly shaped spots and a lateral series of smaller ones; whitish below, heavily powdered with light brown, the light areas appearing as squarish spots. Head brown above, paler below, with or without a dark temporal streak; tail light brown (? pink in life), with a dorsal series of conspicuous black spots. Head rather elongate, covered with very small, unequal, obtusely keeled scales. Supraoculars long and narrow, entire, with 14-16 scales on a line between them. Internasals separated from each other by 3-4 small scales. Two enlarged scales on a line between the internasal and the supraocular. Supralabials 9-11, the first completely separate from the nasal. Subocular elongate, separated from the supralabials by 2-3 series of small scales. Temporals in 2-3 rows, consisting of enlarged scales immediately above the supralabials and of much smaller scales dorsal to them. Scales in 25  $\times$  25 : 19 rows, strongly keeled. Ventrals 200-221. Subcaudals 76-91, paired. Hemipenis extends up to the 12th caudal plate; forked opposite the 6th plate; organ is calyculate on the distal side; spines are present on the proximal side; spinose area is twice as extensive as the calyculate area; the spines increase in size as the bifurcation is approached and are largest in the area of sulcus.

*Distribution* : India : Assam (the Naga Hills).

*Elsewhere* : Myanmar (North east area); Tong-King; and China.

*Habits and habitat* : It is arboreal, nocturnal in normal conditions. The snake is oviparous and lays 5-13 eggs in a single clutch. The food comprises the lizards and other small vertebrates.

*Status* : Available, but not in abundance.

## EAST HIMALAYAN PIT-VIPER

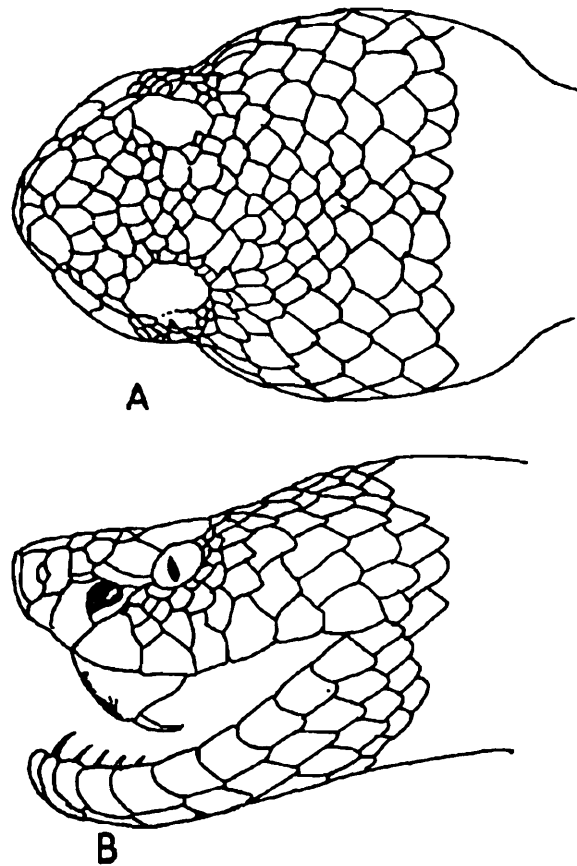
314. *Trimeresurus monticola* Gunther 1864

(Text fig. 183)

1864. *Trimeresurus monticola* Gunther, *Rept. Brit. Ind.*, : 388, pl 24, fig. b. (Nepal; London).

1943. *Trimeresurus monticola*, Smith, *Fauna Brit. Ind.*, 3 : 507.

The total length in males 490 mm, tail 80 mm, and in females 1100 mm, tail 150 mm. The dorsal color is light or dark brown above with large irregular, squarish patches or spots of black upon the back, and smaller ones upon the sides. Head dark



**Fig. 183.** *Trimeresurus monticola* Gunther. A. Dorsal view of head, B. Lateral view of head.

brown above, pale or yellowish on the sides, with a dark brown temporal streak. Lower parts yellowish, either uniform or mottled with brown. Head is covered with small unequal, smooth, feebly imbricate scales. Supraoculars large and entire, with 5-9 scales in a line between them. Internasals 2, large, separated by 1-3 small scales, rarely in contact. Supralabials 7-10, the first completely separate from the nasal; the second furrowed in its upper half and forming the inner wall of the loreal pit. Subocular absent, replaced by many small scales. Scales in 23 (rarely 25) : 23 (rarely 21 or 25) : 19 (rarely 21) rows. Ventrals 127-176. Subcaudals 21-62, paired, or some or all of them single. Hemipenis extends up to the 12th caudal plate; forked at the junction of the proximal third and distal two-thirds; calyculate distally; spinose proximally, the area covered by the spines occupies about twice the area covered by the calyces.

*Distribution* : India : The Eastern Himalayas, Assam.

*Elsewhere* : Myanmar (Burma), Bhutan, S.E. Tibet, Yunnan, Thailand, Annam, Tong-king, southern China, Taiwan and the Malay Peninsula.

*Habits and habitat* : Oviparous; lays 6-18 eggs, 26-40 × 23-24 mm in size, which are concealed in a hole or hollow in the ground or in vegetable debris. The parent guards them until the young emerge.

*Status* : A common snake in throughout its range.

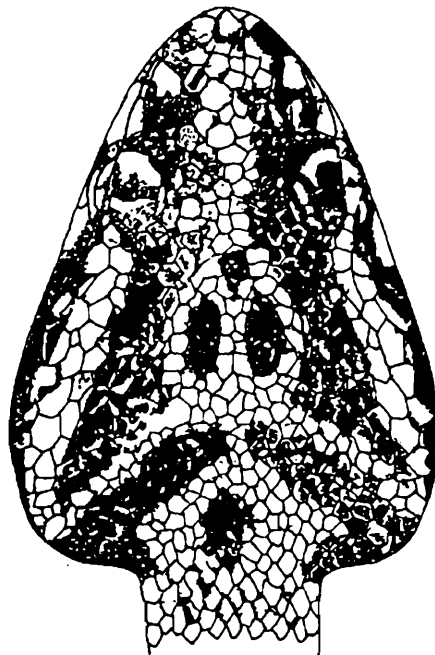
GREENISH-YELLOW PIT-VIPER  
315. *Trimeresurus jerdoni* Gunther 1875  
(Text fig. 184)

1875. *Trimeresurus jerdoni* Gunther, *P.Z.S.*, : 233, pl. 34 (Khasi Hills; London).

1943. *Trimeresurus jerdoni*, Smith, *Fauna Brit. Ind.*, 3 : 510.

Total length : Male 1340 mm, tail 22.5 mm, female 1410 mm tail 230 mm. The dorsal colour is greenish-yellow or olive above, with a dorsal series of black-edged reddish-brown or almost entirely black spots and a series of more or less vertical spots along the sides. Head black above with the yellow lines symmetrically arranged. A black temporal streak present. Belly yellow, much spotted or marked with black, the posterior part and tail almost entirely black. Head covered with small, unequal, smooth scales. Supraoculars large, entire, 6-9 scales on a line between them, 1-3 enlarged scales on a line between the internasal and the supraocular. Internasals large, separated from each other by 1-2 scales. Supralabials 7 or 8, the first entirely separate from the nasal. Subocular elongate, touching the 3rd supralabial. Temporal scales smooth, the series above the supralabials much larger than the others. Scales in 21 (rarely 23) rows at mid-body, strongly keeled. Ventrals 164-193. Subcaudals 44-78. Tail not prehensile. Hemipenis extends up to the 14th caudal plate; forked opposite the third caudal plate; the distal half of the organ is calyculate; the proximal portion is with spines; the spines are in the area remote from the sulcus and are much longer than those present adjacent to it.

*Distribution* : India : Assam as far west as the Khasi Hills.



**Fig. 184.** *Trimeresurus jerdoni* Gunther. Dorsal pattern of head.

*Elsewhere* : Myanmar (Burma) north or lat. 22°; south-east Tibet; Yunnan; Tongking; and China.

*Habits and habitat* : Inhabits only the areas at high altitude up to 9000 feet. The snake is viviparous and produce 4-8 young at a time (7-8 inches in a length) in August and September.

*Status* : Available in sufficient number.

### 316. *Trimeresurus kaulbacki* Smith 1940

1940. *Trimeresurus kaulbacki* Smith, *Rec. Ind. Mus.*, **xiii** : 485, pl. viii, fig. 3. (Pangnamdim, north of the Triangle, Upper Burma : London).

1984. *Trimeresurus kaulbacki*, Mahendra, *Ann. Zool.*, **22** : 354.

The maximum body length reaches 1340 mm, tail 225 mm in males and 1410 mm and 230 mm in females.

This species, closely resembles *T. jerdoni* except in the number of scale rows (23 or 25 : 25 : 19 or 17) and ventrals (201-212). Hemipenis extends up to the 14th caudal plate, forked opposite the 10th plate otherwise as in *T. jerdoni*.

*T. jerdoni* is viviparous, producing 4-8 young, 17.5-20 mm long, in August and September, whereas *kaulbacki* is oviparous, laying 6-32 eggs at a time, of 48-53 × 26-27 mm. size, in holes in the ground. The eggs are guarded by the mother. The young when born measure 26-27 mm. in length.

*Status* : A rare snake, known so far only from the type locality.

### GREENISH MALABAR PIT-VIPER

#### 317. *Trimeresurus malabaricus* (Jerdon 1854)

1854. *Trigonocephalus (Cophias) malabaricus*, *J.A.S. Bengal*, **22** : 523 (Western Ghats).

1943. *Trimeresurus malabaricus*, Smith, *Fauna Brit. Ind.*, **3** : 513.

Total length : Male 550 mm, tail 100 mm, female 790 mm, tail 130 mm. "A common snake of the hills, variable in colour, changing with the seasons, being quite light in the dry season and with faint markings, while in the wet it is dark and the markings are clearly defined" (Ferguson, 1895 "Greenish variegated with blackish, or dark blackish-green. Boulenger says olive, yellowish or reddish-brown. Flanks coarsely dappled with buff. Belly greenish or yellowish" (Wall, 1928, p. 52). Head is covered with small, unequal and strongly intricate scales. Supraoculars divided into 2 or 3 pieces, with 7-9 scales on a line between them. Supralabials 8-10, the first completely separate from the nasal. An elongate subocular present, separated from the supralabials by a series of small scales. Scales in 21 or 23 : 21 (rarely 19) : 15 or 17 rows. Ventrals 136-159. Tail prehensile; subcaudals 44-63, paired. Hemipenis extends up to the 12th caudal plate; forked at the junction of the proximal third and distal two-thirds; the

extreme tip and area adjacent to the sulcus tip and area adjacent to the sulcus are calyculate, the remaining part of the organ bears spines, except an area adjacent to the bifurcation, which is devoid of spines; sulcus lips are prominent throughout.

*Distribution* : Hills of western and southern India, ranging from 2000 to 7000 feet altitudes (Mahableshwar, Goa, N. Kanava, Coorg; Nilgiri, Shevaroy, Anaimalai and Palni Hills; available in Kerala).

*Status* : A common snake in throughout its range.

#### BROWN ROCK PIT-VIPER

##### 318. *Trimeresurus strigatus* Gray 1842

1842. *Trimeresurus strigatus* Gray, *Zool. Misc.*, : 49 (Madras Press.; London).

1943. *Trimeresurus strigatus*, Smith, *Fauna Brit. Ind.*, 3 : 514.

Total length : 450 mm, generally males 375 mm, tail 60 mm females 410 mm, tail 52 mm. Brown above, with dark brown spots, those of the median series often confluent into a zig-zag band. A dark temporal band, and a more or less distinct (U) shaped mark on the nape, Belly light coloured mottled with darker hues. Head covered with small, smooth, subequal, scarcely imbricate scales. Supralabials undivided, with 8 or 9 scales on a line between them. Supralabials 8 or 9, the first completely separate from the nasal, the 2nd entirely distinct from the loreal pit. Subocular separated from the supralabials by a single series of scales. Scales in 21 (rarely 19) : 21 (rarely 23) : 15 (rarely 17) rows. Ventrals 131-144. Subcaudals 32-42. Tail prehensile. Hemipenis extends up to the 10th caudal plate; forked opposite the fourth; the tip and area adjoining the sulcus calyculate, the remaining portion of the organ bears spines.

*Distribution* : Southern India (Nilgiri, Anaimalai, Shevaroy, Palni and Tinnevelly Hills) between 3000 to 6000 feet altitudes.

*Status* : Available, but exact status is not known.

#### BAMBOO PIT-VIPER

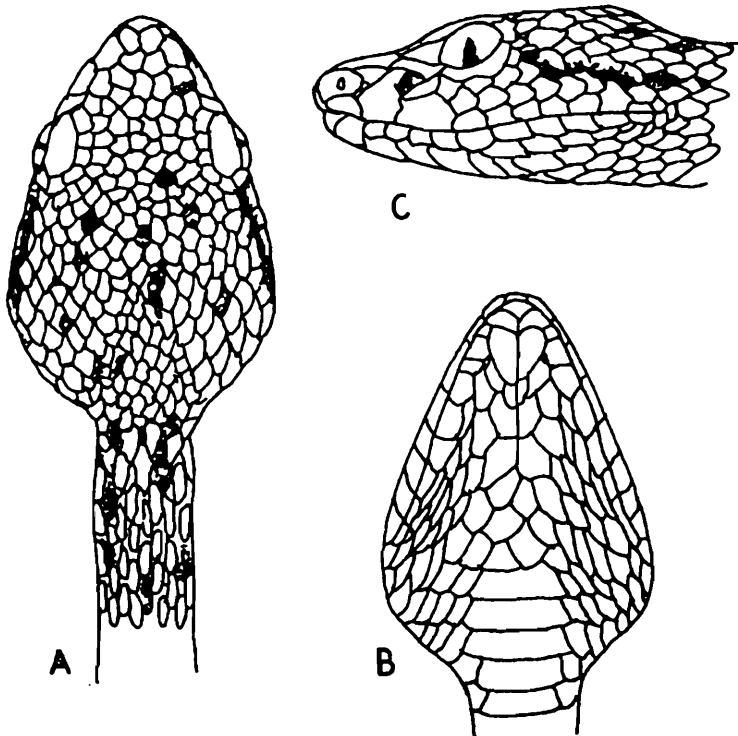
##### 319. *Trimeresurus gramineus* (Shaw 1802)

(Text fig. 185 & 186)

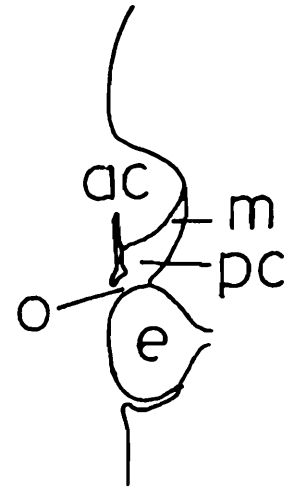
1802. *Coluber gramineus* Shaw, *Gen. Zool.*, 3 : 420 (based on Russell's "Bodroo Pam", Ind. Serp. 1 : pl. 9, : 13 and 2 : 24; type loc. Vizagapatam).

1943. *Trimeresurus gramineus*, Smith, *Fauna Brit. Ind.*, 3 : 515.

The length of this pit-viper reaches up to 745 mm in males and 935 mm in females. Head is quite distinct from the neck, snout two times as long as the diameter of the eye; upper head scales are small, subequal, subimbricate and smooth; supraocular shields are narrow, entire, 8-11 scales on the line between them; internasals 1.5-3 times as large as adjacent scales, separated from one another by 1 or 2 small scales;



**Fig. 185.** *Trimeresurus gramineus* (Shaw). A. Dorsal pattern of head and neck, B. Ventral view of head, C. Lateral pattern of head.



**Fig. 186.** Diagram of horizontal section through left loreal pit of *Trimeresurus gramineus*. ac., anterior chamber; e., eye ball; m., membrane; o., opening of posterior chamber into orbit; pc., posterior chamber.

supralabials are 10-12, first one is completely separated from the nasal, third one is the largest; there are two rows of scales between the labials and the elongated supraocular; temporal scales are small and smooth; scales of the body are in 21 : 21 : 15 smooth rows or the median posterior rows are feebly keeled; ventral shields in males are 145-175 and in females are 164-177; sub-caudal shields in males are 55-71 and in females 57-62; tail is prehensile; hemipenis extends up to the 11th-12th caudal plate, forked opposite the third sub-caudal shield; a calyculate zone surrounds the sulcus on both the sides; the remaining part of the penis is covered with spines. Those present near the tip are smaller than the others. Dorsal colouration is yellowish-green, uniform or in many individuals with small dark-brown spots; ventrum is whitish with a green tinge; in some snakes there remains an uneven line along the flanks; upper lip is whitish; a dark temporal streak may be available or not.

**Distribution :** India : Gujarat : Dangs district; Complete Peninsular India south of latitude 22°

**Habits and habitat :** Inhabits the hilly forested area, generally in low vegetation and bamboo clusters; it is a nocturnal snakes which remains most sluggish during the day and lives on the tree branches camouflaging with thin green colours. It bites readily on provocation. Its food comprises the small mammals, birds, lizards and small snakes. Produces 7-15 young in June-July.

**Status :** Its population is decreasing on account of its habitat loss for urbanization.

**EAST-HIMALAYAN GREEN PIT-VIPER****320. *Trimeresurus stejnegeri* (Schmidt 1925)**

1925. *Trimeresurus stejnegeri* Schmidt, *Amer. Mus. Nov.* no. 157 : 4 (Shao-Wu, Fukien, China; New York).

1943. *Trimeresurus stejnegeri*; Smith, *Fauna Brit. Ind.*, 3 : 517.

The maximum length reaches up to 750 mm, tail 145 mm. This species closely resembles *Trimeresurus popeorum* in its morphological characters and coloration. Ventrals 161-171. Subcaudal 60-74. Hemipenis is short and thick and extends up to the 10th caudal plate; forked opposite the fifth caudal plate; the tip and an area adjacent to the sulcus as far as the bifurcation are calyculate, the remaining, to beyond the bifurcation is spinose; the proximal spines are largest; sulcus is prominent. It differs from the hemipenis of *T. Popeorum* whereas the organ is "long and slender, entirely devoid of spines (Pope and Pope, 1933).

*Distribution* : The Indo-Chinese region (including Darjeeling, Himalayas, Shillong, Assam and Upper Burma); Yunnan; China; Thailand.

**SMITH'S GREEN PIT-VIPER****321. *Trimeresurus popeorum* Smith 1937**

1937. *Trimeresurus popeorum* Smith, *J. Bombay Nat. Hist. Soc.*, 39 : 730.

1943. *Trimeresurus popeorum*, Smith, *Fauna Brit. Ind.*, 3 : 518.

Total length : 770 mm, tail 170 mm. The dorsal colour is green above, pale green or whitish below. A light stripe along the flank and base of the tail, mainly on scale row 1. A light stripe behind the eye may or may not be present. Upper lip pale green. End of the tail usually pinkish. Head covered with small, unequal, smooth scales. Supraoculars narrow, sometimes divided by a suture, with 10-13 scales on a line between them. Internasals separated from each other by 1.2 scales. Supralabials 9-11, the 1st separate from the nasal. Subocular elongate, separated from the supralabials by a single series of scales. Temporal scales small, more or less strongly keeled. Scales in 23 or 21 : 21 : 15 rows, more or less strongly keeled. Ventrals 164-170. Subcaudals 60-76 paired. Tail prehensile. Hemipenis is long and slender and extends up to the 20th-25th caudal plate; forked opposite the 5th-7th caudal plate; calyculate throughout, except near the bifurcation, the calyces being largest at the proximal end; sulcus is prominent; the organ is devoid of spines. Pope and Pope (1933, pp. 2 and 7-8) called this species *gramineus*, but Malcolm A. Smith (1937, p. 730) changed the name to *popeorum*.

*Distribution* : The Eastern Himalayas, Assam, Myanmar, Thailand, the Malay Peninsula, Borneo and Sumatra.

*Status* : The species is fairly common in many parts of its range, especially in the Malay Peninsula.

## NICOBAR PIT-VIPER

322. *Trimeresurus cantori* (Blyth 1846)

1846. *Trionocephalus cantori* Blyth, J.A.S. Bengal, 15 : 377 (Nicobar Island; Calcutta).

1943. *Trimeresurus cantori*, Smith, *Fauna Brit. Ind.*, 3 : 519.

Total length : Male 690 mm, tail 135 mm, female 1150 mm, tail 140 mm. The color is very variable. Olivaceous light or dark brown above, uniform, or variously variegated or spotted. A white streak starting on the snout and passing below the eye to the angle of the mouth usually present. A light lateral stripe on scale row 1, present or absent. Whitish, yellowish or greenish below, uniform or spotted. Upper head scales smooth or obtusely keeled, feebly imbricate. Supraoculars separated from each other by 13-16 scales on a line between them. Subocular separated from the supralabials by 2 rows or scales. Temporal scales smooth or obtusely keeled. Scales in 27 or 29 : 27 to 31 : 17 to 21 rows, smooth or feebly keeled. Ventrals 171-182. Subcaudals 56-76, paired. Hemipenis is long and slender extends up to the 16th-20th caudal plate; the distal end is calyculate nearly to the point of forking, when it becomes papillose; both calyces and papillae involve the lips of the sulcus; the organ is devoid of spines.

*Distribution* : The Nicobar Islands; Andaman Island.

*Status* : A common snake in Nicobar Islands.

## ANDAMAN PIT-VIPER

323. *Trimeresurus purpureomaculatus*  
(Gray & Hardwicke 1830)

1830. *Trionocephalus purpureomaculatus* Gray & Hardwicke, III. *Ind. Zool.* 1, pl. 81, based on Hardwicke's sketch no. 158 (Singapore).

1943. *Trimeresurus purpureomaculatus*, Smith, *Fauna Brit. Ind.*, 3 : 520.

Head is covered with small subequal scales. Supraoculars narrow, entire, with 8-16 small scales in a line between them. Internasals enlarged elongate, usually separated by a single scale. Supralabials 10-13 the first partly or completely united with the nasal, the second furrowed in its upper half and forming the inner wall of the loreal pit. Subocular elongate, separated from the supralabials by 1-3 rows of scales. Tail prehensile. Hemipenis is like *T. cantore*.

Two subspecies can be recognised.

(A) *Trimeresurus purpureomaculatus purpureomaculatus* (Gray and hardwicke).

1830. *Trionocephalus purpureomaculatus* Gray and Hardwicke, III. *Ind. Zool.* I, pl. 81, based on Hardwicke's sketch, no. 158 (Singapore).

1943. *Trimeresurus purpureomaculatus purpureomaculatus* Smith, *Fauna Brit. Ind.*, 3 : 520.

Upper head scales tuberculate or granular. Supraoculars separated from each other by 12-15 scales on a line between them. Temporal scales strongly keeled. Scales in 25 : 25 or 27 : 19 or 21 rows, strongly keeled. Ventrals 160-183. Subcaudals 56-76, paired. Total length : Male 665 mm, tail 125 mm, female 900 mm, tail 140 mm. Olivaceous, grayish or dark purplish-brown, either uniform or spotted with brown. A white line along scale-row 1 present or absent. Greenish, whitish or brownish below, uniform or spotted. Head olive, thickly spotted with brown. Tail spotted brown all over.

*Distribution* : Malay Peninsula and Islands, Myanmar (Burma).

*Status* : Extremely rare in Eastern Thailand and Myanmar.

(B) *Trimeresurus purpureomaculatus andersoni* Thebald.

1868. *Trimeresurus andersoni* Thebald, *Cat. Rept. Asiat. Soc., Mus.*, : 75, and *Cat. Rept. Brit. Ind.*, 1876, : 224 (Andaman : Calcutta).

1943. *Trimeresurus purpureomaculatus andersoni* Smith, *Fauna Brit. Ind.*, 3 : 521.

Upper head scales smooth, subimbricate, not tuberculate. Supraoculars separated from each other by 9-12 scales on a line between them. Temporal scales feebly keeled, sometimes almost smooth. Scales in 23 or 25: 23 or 25 (rarely 21) : 17 or 19 rows, feebly keeled. Ventrals 171-183. Subcaudals 53-74, paired. Total length : Female 1100 mm., tail 170 mm. The dorsal color is olivaceous, light or dark brown, with many of the scales partly or wholly whitish or light green. A light stripe on scale-row 1 present or absent. Greenish, yellowish, or brownish below, uniform or with a few brown spots.

*Distribution* : Andaman Islands., and the Nicobars.

*Status* : A common snake in Andaman Islands but rare in Nicobars.

NAGA-HILL PIT-VIPER

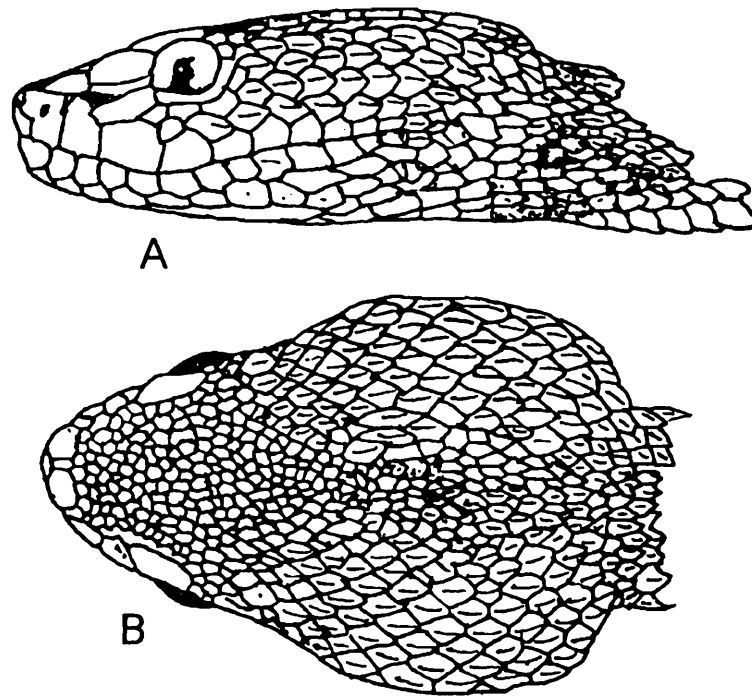
324. *Trimeresurus erythrurus* (Cantor 1839)

(Text fig. 187)

1839. *Trigonocephalus erythrurus* Cantor, *P.Z.S.*, : 31 (Ganges Delta, London; Col. Sketch in Bodleian Library, no. 17).

1943. *Trimeresurus erythrurus*, Smith, *Fauna Brit. Ind.*, 3 : 522.

Total length : Male 575 mm, tail 120 mm, female 1045 mm, tail 165 mm. The dorsal colouration is green above; pale green, blue, yellowish or whitish below. A light stripe on scale-row 1, extending from the neck to the base of the tail, present in all male; indistinct or absent in females. Upper lip whitish or pale green. A light temporal stripe starting from below the eye sometimes present. End of the tail spotted or mottled with brown, or not so. Head covered with small tuberculate subequal scales. Supraoculars narrow, entire, with 8-14 scales on a line between them. Internasals



**Fig. 187.** *Trimeresurus erythrurus* (Cantor). A. Lateral pattern of head and neck, B. Dorsal pattern of head.

larger than the adjacent scales, in contact with each other or separated by a single scale. Supralabials 9-13, the first partly or completely united with the nasal, the second participating in the formation of the labial pit. Subocular elongate, separated by 1-2 rows of scales from the supralabials, temporal scales are small, strongly keeled; ventrals 151-158; subcaudals in male 62-79, in females 49-61; body scales more or less strongly keeled, in 21 (19), 23 or 25 rows at mid-body. Subcaudals usually paired. Tail prehensile. Hemipenis extends up to the 20th-25th caudal plate; forked opposite the 5th-6th plate; the distal  $\frac{2}{3}$ - $\frac{3}{4}$  is finally calyculate, the remaining portion, to the point of forking, papillose; the sulcus is prominent.

*Distribution* : India : Bengal and Himalays east of long. 88°; Assam.

*Elsewhere* : Myanmar (Burma), west of long. 98° and south to Moulmein.

*Status* : Very common in Naga Hills, Arunachal Pradesh.

NORTH INDIAN GREEN PIT-VIPER  
325. *Trimeresurus albolabris* Gray 1842

1842. *Trimeresurus albolabris* Gray, *Zool. Misc.*, : 48 (China; London).

1943. *Trimeresurus albolabris*, Smith, *Fauna Brit. Ind.* 3 : 523.

The maximum length in males 600 mm, tail 120 mm, and in females 810 mm, tail 130 mm. The dorsal colour is green, pale green blue, yellowish; ventrum is whitish; ventral scales are having a shining glaze; a light stripe on scale row 1, which starts

from the neck and reaches up to the base of the tail (in all males), but this pattern may be indistinct or absent in females; upper lip is white or pale-green; a light temporal stripe emerges from below the eye (in males); end of tail is devoid of brown mottling. Head scales are smooth, feebly imbricate; supraoculars with 8-2 scales on a line between them; temporals are small, smooth or feebly keeled; supralabials 10-12; body scales are distinctly keeled, in 21 or 23 : 21 (10) : 15 (17) rows; ventrals in males 155-166, females 152-176; subcaudals in males 60-72, in females 49-66 (72), paired; tail is prehensile. Hemipenis extends up to 20th-25th caudal plate; forked opposite the 5th-6th plate; the distal 2/3-3/4 is finally calyculate the remaining part, to the point of forking is papillose; the sulcus is prominent.

*Distribution* : Northern India (Simla and Kulu in the Punjab); Madhya Pradesh.

*Elsewhere* : Nepal; the whole of the Indo-Chinese subregion from the Eastern Himalayas the southern China, Taiwan and Hong-Kong; Hainan; Thailand and Burma north of lat. 13°; the Andaman and Nicobar Islands; Sumatra, Java and the Dutch East Indies as far south as Timor.

*Habits and habitat* : Inhabits plain open country, gardens near humane habitations and foot-hills. Food comprises lizards.

*Status* : A common species in throughout its range.

#### NICOBAR BROWN PIT-VIPER

##### 326. *Trimeresurus labialis* (Fitzinger 1861)

1861. *Hydrophis labialis* Fitzinger, *Sitzh. Acad. Wiss. Wien.*, **42** : 411 (nom. nud.).

1867. *Trimeresurus labiales* Steindachner, *Reise. Nov. Rept.*, : 86, pl. 3, figs. 1-2 (Nicobars; Viena).

1943. *Trimeresurus labialis*, Smith, *Fauna Brit. Ind.*, **3** : 525.

The maximum length in males 420 mm, tail 80 mm, and 440 mm, tail 68 mm in females. The dorsal colouration is olivaceous, light or dark brown, this colour is uniform or with additional variegations or spots; a white streak starts from the snout and passes below the eye to the angle of the mouth is present in most of snakes; a light lateral stripe on scale row 1 present or may be absent; ventrum is yellow with a greenish tinge, it may be uniform or may be spotted. The scalation is like *Trimeresurus cantori* but in this species supraoculars are separated by 8-11 scales on a line between them; the subocular is separated from the supralabials by a single row of scales; the body scales are in 21 or 23 : 21 or 23 : 15 or 17 rows; ventrals 154-174; subcaudals 46-65, usually paired. Hemipenis is like *T. cantori*.

*Distribution* : India : The Nicobar Islands; Andamans.

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