

Reptilia and Amphibia of British India.*

THE present volume is the second of the four into which Dr. Smith planned to divide the revision of the Reptilian and Amphibian Fauna of British India. The first volume, dealing with the *Loricata* (Crocodilia) and *Testudines* (Chelonia), appeared in March, 1931. The third volume will deal with the Snakes, and the fourth with the Amphibians. Both the volumes so far published mark a decided improvement over Boulenger's work "Reptilia and Batrachia" 1890, in this series.

As mentioned by the author in his preface to the First Volume, the region dealt with is not precisely that forming the scope of Boulenger's work, but "has been extended to include the whole of the Indo-Chinese sub-region, and is almost the same area as that included by Günther in his "Reptiles of British India," 1864. This extension in the limits of the area dealt with is due to the fact that the fauna of Siam, French Indo-China and Southern China is so closely allied to that of Burma that the author feels it to be scientifically incorrect to separate the two from each other. We trust that the change is for the better, as it makes it possible to avoid the artificial division of this natural sub-region and to consider it as a *whole*. Altogether, the volume on *Sauria* (Lizards) describes 297 species, of which 248 occur in the Indian Empire; while Boulenger's work (1890) contained descriptions of 226 species of Lizards (including also the Chamæleon), of which 17 were "included upon incorrect data or have since been placed as synonyms". This means that Dr. Smith's volume contains the descriptions of 39 more species than Boulenger's.

As in his descriptions of the orders *Loricata* and *Testudines* in the First Volume, the author begins his work on *Sauria* with an illuminating general Introduction, which deals with Structure, Evolution, Devolution, Geographical Distribution, Economics, and Preservation and Examination of Specimens. Dr. Smith possesses the knack of clear and concise expression and he has, in this Introduction, condensed a great deal of scientific knowledge about this group of reptiles. In the section on Evolution and Devolution, he gives a valuable account of the evolution

of the adhesive digital pad and the external coverings of the eye, as also of the degeneration of the eye, the ear and the limbs. The remarks in this section, as pointed out in the preface, are the "outcome of the study of the structure of the Indian and Indo-Chinese species". But the author assures us (pp. v, vi) that he has carried out his researches much further afield and has studied the whole group from this standpoint. We look forward eagerly to a fuller account of these problems.

About *femoral glands or organs* (p. 4), the author says, "They are not true glands, but tubular invaginations of the epithelium, the opening of which, termed the pore, may perforate a scale or lie between two or more scales." We are not in a position either to endorse or to refute the author's verdict that these are not really glands; but certainly there are a great many workers who have investigated these structures and are inclined to regard them as glands. Camp (1923)¹ gives an excellent résumé of the work done in this direction, and says: "Duvernoy, Wagler (1830),² and Johannes Muller first noted the glandular nature of the femoral organs. The histology has been investigated by Leydig (1872), Schæfer (1902),³ Cohn (1904),⁴ Tölg (1903),⁵ Félizet (1911)⁶ and others. Félizet remarks upon the similarities with the mammalian sebaceous gland..... This was also partly the view of Meissner (1832),⁷ Leydig, and Schæfer, and many later workers..... Maurer...believed that the proximity of lymph spaces indicated a similarity to the musk glands of crocodiles.... The glands

¹ Camp, C. L., "Classification of the Lizards," *Bull. Amer. Mus. Nat. Hist.*, 1923, 48, 401-403.

² Wagler, J., "Natürliches System der Amphibien, mit vorangehender Classification der Säugethiere und Vögel," *Ein Beitrag zur vergleichenden Zoologie*, München, Stuttgart and Tübingen, 1830.

³ Schæfer, F., "Ueber die Schenkeldrüsen der Eidechsen," *Archiv für Naturgeschichte*, 1902, 68, Band I, 27-64.

⁴ Cohn, L., "Die Schenkeldrüsen des *Cnemidophorus tenniscatus* Daud.," *Zoo. Anz.*, 1904, 27, 185-192.

⁵ Tölg, F., "Beiträge zur Kenntniss drüsenartiger Epidermoidalorgane der Eidechsen," *Arbeiten Zoolog. Inst. Wien*, 1905, 15, 119-154.

⁶ Félizet, J., "Recherches sur le Glandes Fémorales de *Lacerta muralis*," *Journ. d'Anat. Physiol.*, 1911, 47, 333-370.

⁷ Meissner, C. F., "Die Amphiborum quorundam Papillis Glandulisque Femoralibus," 1832, Basel.

* *Fauna of British India including Ceylon and Burma. (Reptilia and Amphibia)*. Vol. II. *Sauria*. By Malcolm A. Smith. (Taylor and Francis, London). 1935. Pp. xiii+440, 93 text-figures, 3 plates and 2 maps. Price 30s.

are seemingly of functional significance and not vestigial or rudimentary structures."

As regards the evolution of the *external coverings of the eye* (p. 9), the author believes that "the simplest form of eye-covering is to be found in the Geckoes" and that this type has given rise to others by "the disappearance of the immovable transparent disc, its function as a covering for the eye being now undertaken by the eyelids. Whether it becomes thinned and so disappears, or whether it becomes united with the cornea," he is "unable to say". May we point out that some zoologists (e.g., Johnson, 1927),⁸ who have given thought to this problem, regard the gecko type of eye-covering as not simple, but specialised, due to an "excessive development and specialisation of the nictitans, which becomes quite transparent"?

Besides the Introduction, the volume on *Sauria* contains excellent systematic descriptions of the sub-order, families, genera and species of the region dealt with; complete synonymies of not only the generic and specific names, but also of those of the families and the sub-order; a glossary and general index; and a fairly complete bibliography. The author has examined the types of almost all the species mentioned and has taken great pains to make the work as authoritative and helpful as possible. He has followed the law of priority in nomenclature rather rigidly, and has carried it "into all groups, although the Rules of Zoological Nomenclature do not, at present, require it to be carried higher than genera". For our part, we doubt the utility of changing the nomenclature of zoological classification at the cost of common usage, especially in the case of groups higher than genera and species.

In going through the Bibliography, one observes the omission of several important papers, referred to in the text. One looks in vain, for example, for the papers of

Weekes, 1929 and 1930 (referred to on p. 6 of the volume), Hingston, 1933 (the same page), Hewitt, 1929 (referred to on p. 3), etc. Much of the value of a work like the present one lies in directing our attention to the original contributions on the subject and we hope that Dr. Smith would give a more complete list of references in the coming volumes on Snakes and Amphibians.

Boulenger (1890) in his volume on "Reptilio and Banrachio" preferred to divide Lizards into two sub-orders: *Lacertilia* and *Rhiptoglossa*, the latter consisting of a single family, *Chamæleotidæ*. Dr. Smith, however, includes *Chamæleotidæ* along with the other Indian families of Lizards in the same synopsis (pp. 20-21) and places this family just after *Agamidæ*. This is in accordance with Cope's opinion that the Chamæleons are related to the Agamids, an opinion confirmed by Camp (1923).⁹

One might mention, perhaps, that in the case of one genus at least (*Hemidactylus*) no mention of the size and nature of eggs is made even though we have some records about them. Bains Parshad's article on *H. flaviviridis* (*Jour. Bom. Nat. Hist. Soc.*, 1916, 24, pp. 834-838) has, apparently, not been available. It would probably be better also to have the glossary of each volume as complete as possible, irrespective of the fact that some terms have been explained in a previous volume. Such a procedure would make each volume of this series so independent of others as to make reference by a layman really easy and would facilitate his understanding of the common terms used in the text to a considerable extent.

Dr. Smith is a well-known herpetologist, and we are sure that his present work is really the best introduction so far published to the systematic study of Indian Lizards. He has produced a volume of decidedly high order, and Indian zoologists should be particularly grateful to him for it.

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⁸ Johnson, G. L., "Contributions to the Comparative Anatomy of the Reptilian and the Amphibian Eye, chiefly based on Ophthalmological Examination," *Phil. Trans. Roy. Soc.*, 1927, B 215, 319-320.

⁹ Camp, C. L., *op. cit.*, 333.