

against Major Wall's views as to the species of *Dipsadomorphus* (which are based on a great deal more material than is often the case) as against the tendency they illustrate. If every little difference between individuals or sets of individuals is to be regarded as of specific value, "philosophical" zoology must cease to exist, and all zoologists must busy themselves in searching for such differences as diligently as the stamp-collector counts the number of perforations on his specimens.

N. ANNANDALE.

BATRACHIA.

Notes on Indian Batrachia :—

1. *Rana vicina*, STOLICZKA.—*Rana vicina* was described in 1872 by the late Dr. F. Stoliczka, and the type specimen, which came from Murree, is still in the Indian Museum, its registered number being 9147.

Mr. Boulenger in his volume on the Reptiles and Batrachia in the "Fauna" (1890) queried the species as a synonym of *R. liebigii*, Günther, but Mr. W. L. Sclater, in his list of the Batrachia in the collection of the Indian Museum (1892), regarded it as distinct. In 1905 Mr. Boulenger suggested that the form was identical with the species he had described in 1882 as *Rana blanfordii*, a view which he confirmed in 1907 after examining specimens of *R. blanfordii* from the neighbourhood of Naini Tal. Accepting this view, I described (1908) the tadpole of the form common at Naini Tal as that of *R. vicina*, pointing out the characters in which it differed from the larva of *R. pleskii* and *R. liebigii*. Having recently, however, had occasion to compare considerable numbers of specimens from the Western Himalayas with the type of *R. vicina*, I detected what appeared to be constant differences. Besides the type there was one other specimen in the collection from the Western Himalayas identified by Mr. Sclater as *R. vicina*, namely, a large individual from Simla presented many years ago by Lieut. A. Newnham. A careful comparison between these two specimens convinced me that they represented the same species, and that this species differed from the form common at Naini Tal. The only difference that I could detect between the two specimens was that the type of *R. vicina* was considerably smaller than the specimen from Simla. I therefore sent the latter to Mr. Boulenger, who agrees with me that it is not his *R. blanfordii* and regards it as a specimen of *R. liebigii*. Without seeing the type he naturally prefers not to express an opinion as to its identity, but he has courteously asked me to publish a note on the subject. The following is a summary of what can be discovered about the two forms; for I think that there can be no doubt that *R. vicina* is distinct from *R. blanfordii*.

R. blanfordii is distinguished from *R. liebigii* (1) by its smaller size, its maximum length without the limbs being 49 mm. while *R. liebigii* grows at least 90 mm. long; (2) by the fact that the males

do not develop nuptial excrescences on the fore limbs at the breeding season and are devoid of vocal sacs; (3) by its stouter habit; and (4) by its darker and more purple coloration.

From the type of *R. vicina* it differs in exactly the same characters so far as can be seen, for this specimen, not being a breeding male, provides no information as regards the nuptial excrescences. The type of *R. vicina* measures 60 mm. in length, but it agrees in all other respects with the specimen from Simla measuring 77 mm. in length. I can detect no difference between it and typical specimens of *R. liebigii* from the Eastern Himalayas.

The synonymy of *R. blanfordii*, which must be considered a "good" species, is as follows:—

- R. blanfordii*, Boulenger, *Cat. Batr. Sal. Brit. Mus.*, p. 23 (1882).
 (?) *R. vicina*, *id.*, *Ann. Mag. Nat. Hist.* (7), xvi, p. 640 (1903).
R. vicina, *id.* (nec *Stoliczka*), *Rec. Ind. Mus.*, i, p. 150 (1907);
Annandale, ibid., ii, p. 304, and (tadpole), ii, p. 346.

The type of *R. blanfordii* came either from Arabia or from Darjiling, but the species is common in Kumaon, Garhwal and the Simla district at altitudes of between 6,000 and 9,000 feet. In wet weather and in places where there is a plentiful water-supply it is aquatic in habits. In the neighbourhood of Simla, however, it conceals itself during the dry season. If it occurs in the Eastern Himalayas, it must be very rare. Large tadpoles are common in the W Himalayas in mountain streamlets and in wells both in May and September.

R. vicina, on the other hand, must be regarded as a synonym of *R. liebigii*. This species is very common in the Darjiling district at altitudes of 5,000—8,000 feet. Living in a much damper climate than that of the Western Himalayas, it is not so essentially aquatic in its habits but is found in damp jungle. It also occurs in the Punjab Himalayas, but is there very rare.

2. *Bufo stomaticus*, LÜTKEN.—During the last few years I have had the opportunity of examining large numbers of living and preserved toads from Bengal, the Eastern Himalayas, the United Provinces and the Punjab. A species that has puzzled me much is the form described in 1862 by Professor Lütken, and redescribed by Mr. Boulenger in 1891 (*Ann. Mag. Nat. Hist.* (6), vii, p. 463) as *Bufo stomaticus*. This form was not described in the latter author's volume on the Reptiles and Batrachia in the *Fauna of British India* (1890), because in the original description the habitat of the species was not given. Mr. Boulenger, however, in 1891 recognized *B. stomaticus* as distinct from *B. andersonii*, while Mr. W. L. Sclater (*P. Z. S.*, 1892, p. 347) wrote that *B. stomaticus* had hitherto been confounded with *B. andersonii*. *B. andersonii* is recorded from Arabia and North-Western India (Boulenger) and from Purneah in Northern Bengal (Sclater); *B. stomaticus* from Lower Bengal, the Darjiling Himalayas up to 5,000 feet (Annandale), Assam and Burma (Sclater).

Comparing Mr. Boulenger's descriptions of the two species, the following differences appear :—

- (1) *B. andersonii* has a tarsal fold ; *B. stomaticus* has not.
- (2) In *B. andersonii* the tympanum is round ; in *B. stomaticus* vertically oval.
- (3) In *B. andersonii* the first finger extends as far as or slightly further than the second ; in *B. stomaticus* the first finger is longer than the second.
- (4) In *B. andersonii* the toes are two-thirds or half webbed ; in *B. stomaticus* three-quarters.

Mr. Boulenger regards the first of these differences as the most important, and it is the only one that has made me hesitate in uniting the two species. I have recently found, however, that it is one easily produced by the method of preservation. In living specimens from Calcutta, or in specimens preserved in weak spirit or in formalin, there is no fold ; while specimens in which the fold was absent during life develop a fold if preserved in strong spirit, owing to shrinkage of the soft tissues. Such examples are often indistinguishable from specimens from North-Western India. As regards the proportionate length of the fingers, the shape of the tympanum and the degree to which the toes are webbed, considerable variation exists even among individuals taken together in the same place, nor can any one condition as regards any of these points be correlated with any one locality, for the characters are as variable in individuals from Calcutta as they are in those from Lucknow, Allahabad or Simla. In some individuals the dorsal surface is olive-green ; more frequently it is grey. The ventral surface is occasionally splotched with black. I see no reason, therefore, to separate the two species ; and as *B. stomaticus* was described in 1862, the name has priority over that of *B. andersonii*, which was described in 1883.

B. stomaticus is common in Calcutta, although owing to its strictly nocturnal habits it is rarely seen ; for unlike *B. melanostictus*, which comes out in large numbers at dusk or even during the day-time in wet weather, it remains concealed until night has fallen. Large numbers may be found during the rains huddled together in the many crevices afforded by the tree-trunks of the Peepuls (*Ficus religiosa*) on the *maidan*. They make their way up these crevices to the height of five or six feet from the ground.

3. A SMALL COLLECTION FROM TRAVANCORE AND COCHIN.—The majority of the specimens here recorded were obtained in November, 1908, at or near the base of the Western Ghats in the State of Travancore. A few, however, were taken at Ernakulam in the neighbouring State of Cochin.

Rana hexadactyla.

A very common species in the plains of Travancore. Two colour varieties can be distinguished :—

Var. *a*. Dorsal surface brown, usually with a median pale stripe.

Var. *b*. Dorsal surface striped longitudinally with grey and white.

Variety *b* retains in maturity the juvenile coloration.

Localities.—Ernakulam, Kerumadi, Virkulai, Shasthancottah Maddathorai.

Rana cyanophlyctis.

As common as the last in open country.

Localities.—Ernakulam, Vykkam, Kulattupuzha.

Rana verrucosa.

Common among stones at the edge of streams running down from the Western Ghats; a jungle species.

Localities.—Kulattupuzha, Maddathorai, Tenmalai.

Rana tigrina.

A common species in open country.

Localities.—Vykkam, Shasthancottah, Shencottah.

Rana limnocharis.

Common in open country and also in jungle at the base of the hills.

Localities—Kerumadi, Vykkam, Trivandrum, Shencottah, Maddathorai.

Rana beddomii.

A single specimen taken with *R. verrucosa* at the edge of a rocky stream at Tenmalai in the Western Ghats.

Rana leptodactyla.

Common at Tenmalai with *R. verrucosa*.

Rana temporalis.

Not uncommon at Tenmalai but difficult to catch owing to its activity and wariness. Single individuals often sit on rocks in exposed situations near streams. When disturbed they leap into the streams and rapidly swim to the other side.

The colour of the back in life varies from nearly orange to dark chocolate.

Rhacophorus maculatus.

A specimen from Shasthancottah. Probably not uncommon.

Micrixalus fuscus.

A single specimen from the edge of a jungle stream at Maddathorai. The back of the thighs was bright lemon-yellow in life.

Ixalus nasutus.

A common species in long grass at the base of the Western Ghats.

Localities.—Kulattupuzha, Tenmalai.

Microhyla rubra.

Apparently abundant in open country. Tadpoles are common in November in little pools of rain-water in the sand near Trivandrum.

Bufo melanostictus.

Common all over the plains. Some specimens from Ernakulam are unusually dark, the ventral surface being black marbled with white.

Ichthyophis glutinosa.

A specimen was taken at Maddathorai in a hollow tree. It had the whole of the ventral surface pure white and therefore differed in appearance from the typical form. A careful comparison, however, with normal specimens, including a microscopic examination of the scales, reveals no other difference.

I propose to call the form with the white ventral surface—var. *tricolor*.

N. ANNANDALE.

FISH.

Notes on Indian Freshwater Fish :—

I. LIST OF FISHES FROM SUR LAKE, ORISSA.—The following species of fish were obtained by Dr. Annandale from the Sur Lake on the 22nd October, 1908. According to the Bengal District Gazetteer, Puri volume, p. 6, the Sur (or Sar) Lake is a freshwater lagoon to the east of Puri town which is formed by a backwater of the Bhargavi river. The lake is four miles long from east to west, and two miles broad from north to south. It has no outlet to the sea, from which it is separated by desolate sandy ridges :—

TELEOSTEI—

Physostomi—

SYMBRANCHIDÆ—

Amphipnous cuchia.