

THE CLAMOROUS FROG.

BY C. FEW SEISS.

This frog, first described by Merrem as the *rana clamitans*, is a widely distributed species, and, although numerous in many sections of this country, is commonly supposed to be the young of the bullfrog (*rana catesbiana* of Shaw). It is, however, a distinct species.

There is one strong specific character in the clamorous frog by which it can always be identified, namely, the elevated fold of skin which originates behind each eye, passing over each tympanum, and disappearing near the bend of the back. These cutaneous elevations are always present in the clamorous frog, even in quite immature animals, while they are never found in the bullfrog at any age.

I have seen specimens of this frog colored almost exactly like the bullfrog, so color alone cannot be taken as a criterion in the specific identification of frogs; nor can it in the majority of animals.

I subjoin descriptions of three living specimens of *rana clamitans*.

No. 1 (male). Form rather robust; snout somewhat pointed. Head, anterior part of body above, and back of tympanum, bright green; posterior portions of the back and sides pale olive brown, or light greenish brown. Arms and legs pale olive brown. Upper posterior surface of body and legs, also the sides, spotted with small pale blackish-brown blotches and spots; nates mottled darker brown and white. Tympanum almost twice the size of the eye, bronzed, with a light green center. Throat lemon-yellow, passing into yellowish white on the abdomen. A few dark marks on the upper jaw. Body and posterior extremities slightly tuberculous. Latero-dorsal cutaneous ridges prominent, extending from orbit to bend of back. Length, from tip of snout to vent, $2\frac{1}{8}$ inches.

No. 2 (female). Snout less pointed than in No. 1. Head, and anterior part of back, grass-green; posterior part, and legs, olive brown, much darker than the preceding. A few blackish brown spots on the rear back. Legs barred with black-brown. Sides spotted black and white. Labials marked with blackish brown wavy lines, inclosing whitish spot. Tympanum but little larger than the eye. Nates

and latero-dorsal ridges, as in the male; the brown mottling of the nates darker, almost black. Skin more or less tuberculous. Length $2\frac{1}{4}$ inches.

No. 3 (female). Before each orbit, below each nostril, a large green spot. Rest of head and fore part of body, dull olive green, with a tinge of brown. Remaining parts as in No. 2, but the colors paler and the markings less distinct.

The male, as described above, was called the spring frog, *rana fontinalis*, by LeConte, Holbrook, and DeKay; and the green and yellow frog, *rana flavi-viridis*, by Harlan. Holbrook says the spring frog is only found in cold spring water.

bly swallowed head foremost, and the devourer presented a ludicrous appearance, when a posterior extremity of the unhappy young frog protruded from either side of her mouth, having the appearance of a huge waxed moustache.

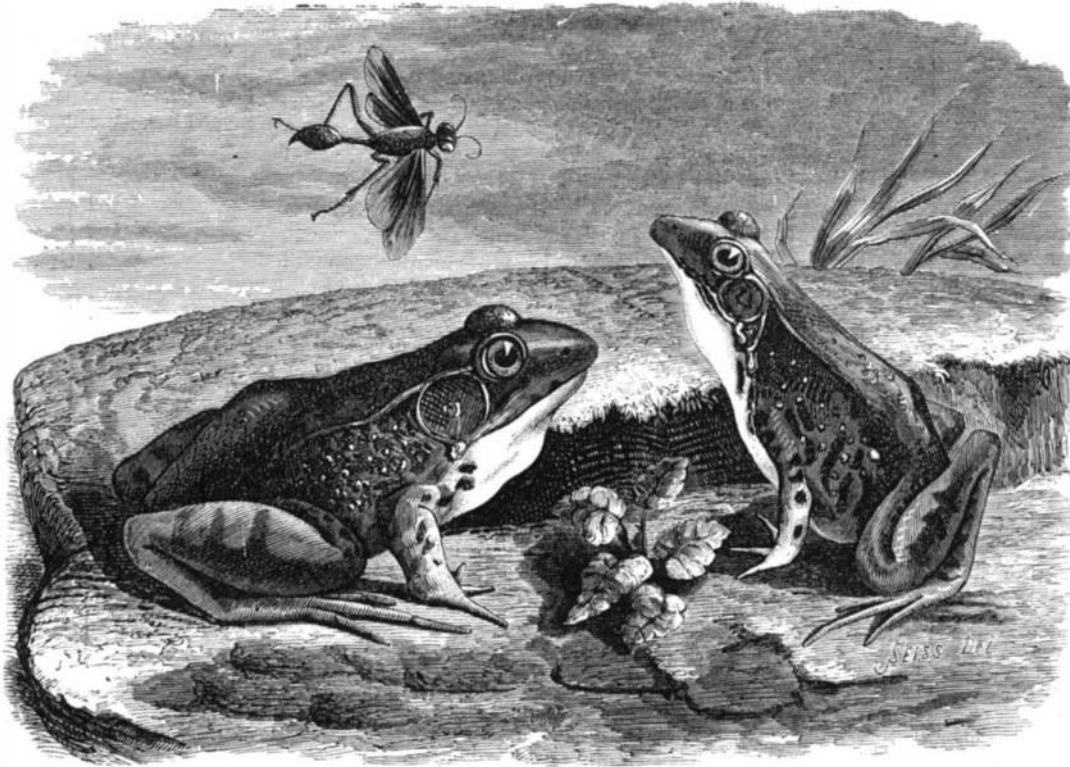
Electricity of the Heart.

Muscular contraction, it is known, is always accompanied with electric phenomena; the difference of electric potential between two points of a muscle, undergoes a diminution, which, according to Bernstein, precedes, by about one one-hundredth of a second, the contraction of the muscle. This electric variation has been observed on various muscles, and in particular on the heart (by Du Bois Reymond and Kühne), and recently M. Marey has represented it graphically by photographing the indications of a Lippmann capillary electrometer. The *Journal de Physique* states that M. De la Roche has tried the experiment on the heart of a living man. Two points of the epidermis of the chest were connected with the poles of a capillary electrometer, by means of electrodes, formed each of a bar of amalgamated zinc, with a plug of muslin at its lower end saturated with sulphate of zinc. Held with insulating handles, the bars were applied, one with its plug opposite the point of the heart, under the left nipple, and the other to another point of the chest. The mercurial column was then seen to execute a series of very distinct periodical pulsations synchronous with the pulse; each pulsation even marked the double movement of the heart (of the auricles and ventricles). The amplitude corresponded to about

one one-thousandth Daniell.

THE IWAKUNI BRIDGE, JAPAN.

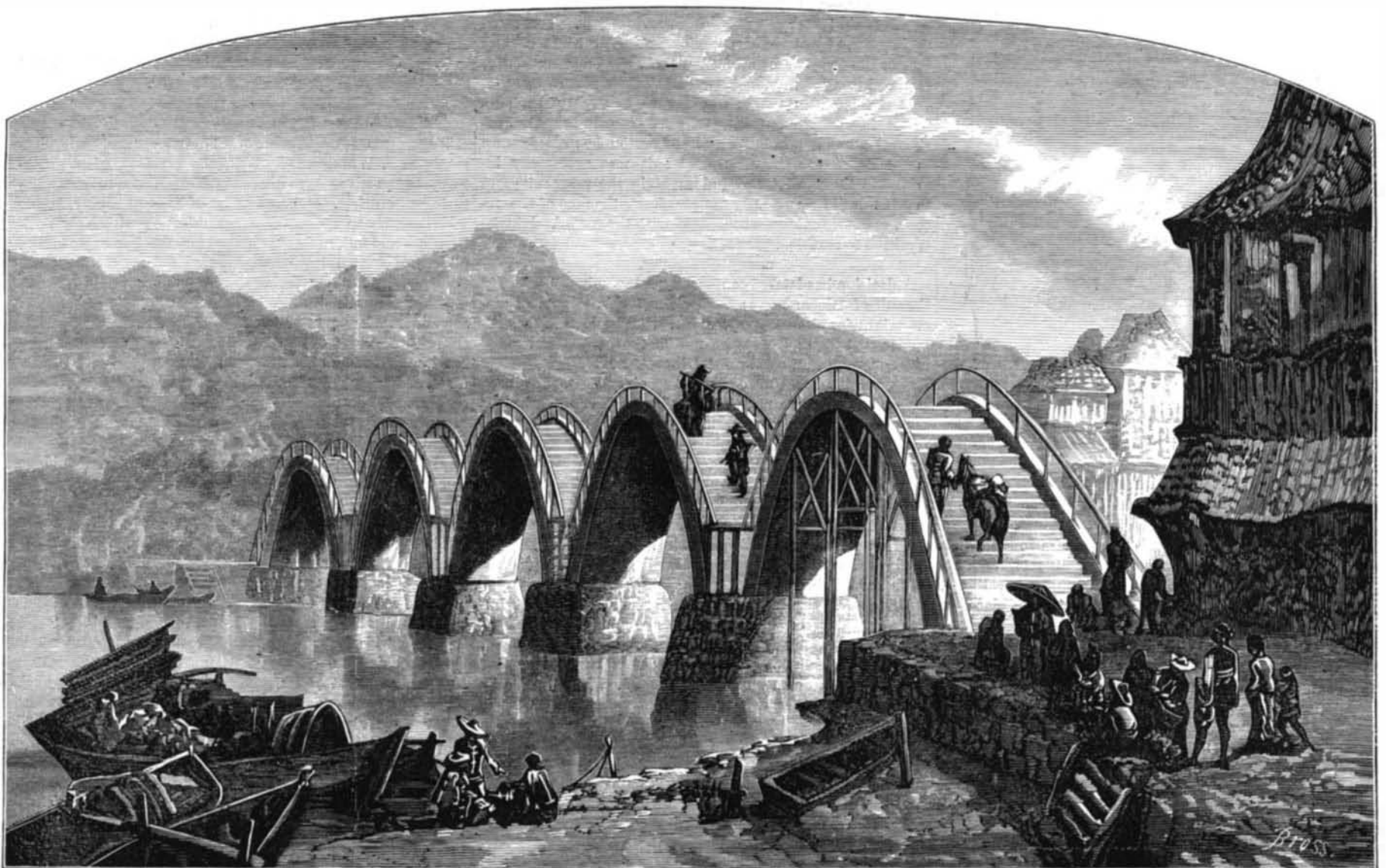
We are indebted to the *Illustrated Adelaide News* for the annexed engraving of a very curious bridge, in existence near the town of Iwakuni, Japan. The structure is simply a series of arches from pier to pier, but instead of filling up the space between the arches to the tops, or bridging across from summit to summit, and thus providing a straight and level pathway, the designer has placed steps on the arches themselves, so that the traveler is obliged to ascend and de-



THE CLAMOROUS FROG.

The typical *clamitans* I have found to be the most common about ponds and streams, and our spring frog was captured in a creek, far distant from any spring. Its abrupt croaking note is exactly similar to that of the other. Its habits are the same, and I have witnessed a male of this variety embracing a female of the typical variety, *clamitans*.

The food of the clamorous frog is various. Insects of all kinds, crawfish, worms, salamanders, and small frogs, I have known it to devour. I have seen a female seize and swallow young frogs of her own species, and which probably were her own offspring. The young frogs were invaria-



A CURIOUS BRIDGE AT IWAKUNI JAPAN.