NOTES ON ODONATA COLLECTED IN SEISTAN AND BALUCHISTAN IN WINTER

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LIBELLULINAE.

Genus **Orthetrum.**

O. taeniolatum, Kirby.

Two males taken at Saindak near the Persian frontier, W Baluchistan, 17-11-18. $\frac{8749}{HI}$. [Dragon-flies I believe to have belonged to this species were also seen near the Hamun-i-Helmand in December. *N. A.*].

One specimen is normal, the other departs from the type by having only one row of cells between *Rs* and *Rspl* in all wings. Both specimens are fully adult and pruinosed.

In the collection are two specimens of Libelluline larvae, taken in the Residency garden, Quetta, 10-11-18. These belong to the genus *Orthetrum* and are probably *taeniolatum*. They closely resemble larvae of the latter taken in the Deccan, where they are common in shallow streams, concealed beneath curtains of *Spirogyra* and other water-weeds. The eyes are prominent and strongly angulated outwards; the body is depressed and squat and the dorsal carina of each segment, except the 10th, ends with a sharp, robust spine. The whole body is hairy, this coat serving to pick up debris and flocculent detritus during life, which serves both for concealment from its foes and as an ambush for its prey.

[The larvae were taken among dense weeds in a pond fed by an underground source of water distinctly warmer than the air at the time. *N. A.*].

AESCHNINAE.

Genus **Hemianax.**

Three *Aeschnid* larvae from Hanna Stream, *ca.* 6,000 ft., near Quetta, Baluchistan, 10-11-18. $\frac{8748}{HI}$. None are fully grown so that it is impossible to tell to what the insects belong by a study of the tracheation, but I think that there is no doubt that these are the larvae of *Hemianax ephippiger*, Selys, a common insect around Quetta. [These larvae are from a small stream with a luxuriant growth of Characeae, amongst which they were concealed. *N. A.*]

AGRIONINAE.

Genus **Ischnura.**

I. elegans, Van der Lind.

$\frac{8746}{HI}$, $\frac{8747}{HI}$, $\frac{8749}{HI}$. Three females, all differing in their colour scheme; this due partly to a teneral condition and partly due to the polychroism customary in this species. I have compared these with a series from Mesopotamia where the insect is very common and find that teneral forms are usually of a bright orange colour, especially as to the thorax. The orange pigment is soon absorbed and replaced by a greenish-yellow. Progressively with the absorbtion of the yellow pigment, blue is laid down, so that a series of forms is met with, passing from orange and yellow, through green to blue. Pari-passu with this, black pigment is deposited until it largely obscures the ground colour. Thus the eye-spots are often absent in the very early stage, being replaced by a broad orange fascia which soon changes through yellow and green, to blue, the change beginning from the front and extending backwards. At the same time, the black fascia which crosses the vertex, extends backwards and gradually laps round the area which is eventually to form the eye-spot. Evidence of this may actually be seen in the specimens quoted. The humeral fascia, usually found in this species, is unenclosed in all three specimens, but two small, black spots on the sides indicate the genesis of a posthumeral stripe.

In one specimen, the second abdominal segment bears a somewhat quadrate, black spot on the dorsum which is absent in the other two. This specimen is a bright orange colour and has the eye-spots fully developed. There is no doubt that some specimens retain the original orange colouring throughout imaginal life. The other two specimens are orange and blue respectively but have no eye-spots nor the quadrate spot on the second abdominal segment. All other markings are the same as the first specimen. In my Mesopotamian specimens, a regular series graduating from the one to the other may be seen so that there is no doubt that the insects are identical.

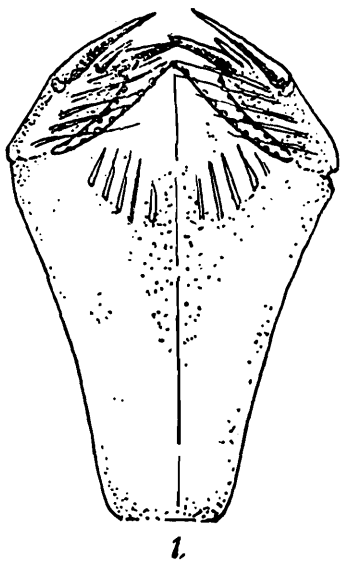


FIG. 1.—Mask of larva of *Ischnura elegans*?

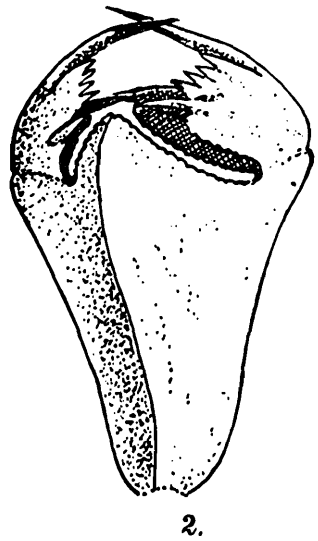
It is possible to divide up a number of Agrionine larvae in this small collection into two species. (The age of the larvae varies somewhat widely). One of these forms closely resembles the larvae of *Ischnura senegalensis* but it is probably the larvae of *I. elegans*. The mask (fig. 1) is long

and flat; the anterior border projects well forward between the palps and is furnished along its free border with minute teeth. The opposed borders of the palps are similarly armed and each is furnished with a strong movable hook and five long, stout setae, directed inward. In addition, each has a robust spine at its end and a smaller one between this and the movable hook. The caudal lamellae are more or less lanceolate and acuminated at the distal end. The tracheal ramification is pigmented and the lateral borders of the lamellae spined, the spines being robust on a little less than the basal half, and rather minute for rather more than the distal half. At the junction of these two different kinds of spines can be seen, in some specimens at least, a very faint suggestion of a transverse line, the only sign of the nodate character of the lamellae. The ends of the tibiae are richly tufted with spinous hairs and spines.

These larvae were taken along with the two Libelluline larvae mentioned above, in the Residency garden, Quetta. One imago was taken at Lab-i-Baring, Seistan, "lying on the surface of the water in channel in reed-beds in the Hamun," 10-12-18, and the other two at Kirtaka, W Baluchistan, near Afghanistan frontier, "among coarse grass growing on sand round a small spring." The females of *Ischnura* commonly lie up among coarse herbage, in the neighbourhood of water, whilst the males rarely stray far from the neighbourhood of water.

INDETERMINATE LARVAE.

The other larvae (from the rice-beds of the Hamun-i-Helmand near Lab-i-Baring) combine some of the features of an Agrionine larva with those of a Lestine. The middle-lobe (fig. 2) is typically Agrionine; there is no suggestion of a middle notch as seen in the other family but the palps are highly differentiated and the movable hook is of great length.



2.

FIG. 2.—Mask of indeterminate larva from the Hamun-i-Helmand.

There is a stout hook on both sides of the movable one and the space between the outer hook and this is deeply serrated. The border of the inner hook is lamellated, its edge being furnished with a row of closely-set, teeth-like processes, similar to rows on the border of the middle lobe and outer border of the palp. The palps appear to be more or less cupped by the lamellated extension.

The anal appendages are also of unusual character and obscurely nodate. They are lanceolate in shape and doubled on themselves like a half-opened leaf. The outer border and midrib are spined for about two-thirds of the proximal end and the distal portion is deeply pigmented in its outer half, in fact almost black in some specimens. The specimens are young so that nothing is learnt from the tracheation.

The larvae of dragonflies usually hibernate during the winter, and it is surprising to find that so many were taken in an active condition during two of the coldest months of the year. [The temperature was as a rule well below freezing-point at night at the time they were captured. The water of the streams and pools at Quetta in which the larvae were found was, however, distinctly warmer than the air, while the channels and pools in the Hamun-i-Helmand were protected from wind and frost by the reeds. *N A.*].