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A NEW *ANISAGRION* FROM PANAMA, WITH NOTES
ON RELATED SPECIES (ODONATA:
ZYGOPTERA)

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SOME time ago Dr. Clarence H. Kennedy supplied me with several lots of dragonflies of the genus *Acanthagrion*. While studying this material I encountered six specimens from Potrerillos, Panamá, which did not fit exactly within the limits of the genus. Further examination disclosed that they represent a hitherto unrecognized species of *Anisagrion* Selys. Owing to its relationship to the genus *Acanthagrion*, which I have been studying for some years, Dr. Kennedy has permitted me to describe the species.

The genus *Anisagrion* was erected by Selys (1876: 242-245) with *alloypterum* Selys as the type. At the same time he described *rubicundum* as a doubtfully distinct form ("? race"). In the appendix of this same paper (*ibid.*: 282) appeared a short description of *Nehalennia lais* (Brauer). Calvert (1901-1908: 104-107, Pl. 5, Figs. 14-15, 17-19) removed *lais* to *Anisagrion*, and described an additional species, *truncatipenne*, on the basis of a unique male from Guatemala. Later, (*ibid.*: 378-379) he gave further data on the latter species, largely obtained from study of a series of specimens collected in Guatemala by E. B. Williamson. While in Costa Rica, Dr. Calvert found evidence to support doubts earlier expressed by him as to the distinctness of *rubicundum* from *al-*

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lopteron. This was referred to by Laurent (1914: 478), and was more fully discussed by Calvert (1917: 60-62). Kennedy (1920: 86) made *lais* the type of a new genus, *Apanisagrion*.

***Anisagrion kennedyi*, n. sp.**

(Pl. I, Figs. 1-2; Pl. II, Figs. 1, 4, 7; Text Fig. 1, A.)

TYPE MALE.—Labrum, anteclypeus, and exposed portions of mandibles light bluish green; postclypeus black; genae to level of postclypeal suture light bluish green; frons, vertex, antennae, and dorsal tips of genae black, marked with light bluish green as follows: an irregularly bordered stripe connecting compound eyes, occupying space between level of antennal bases and median ocellus, barely interrupted at latter point; postocular spots large, subreniform; occipital ridge black; postgenae pale yellow, slightly darker around occipital foramen; exposed portions of labium and maxillae flesh color; entire dorsal surface of head sparsely clothed with long, fine, pale hairs.

Anterior lobe of prothorax yellowish brown dorsally and on extreme lateral tips, edged anteriorly and laterally with black; middle lobe predominantly black, the ventral half of its lateral aspect yellow confluent with that of the anterior lobe, its anterior face bearing a small V-shaped mark of yellowish brown; posterior lobe black except for extreme lateral angles, which are yellow; proepisternum and proepimeron black along dorsal border, remainder pale yellowish green; prosternum flesh color, a black spot between the fore coxae. (E. B. Williamson, 1916: 313, called attention to the existence of a similar marking in *Acanthagrion*.)

Mesostigmal laminae black, their distal third pale yellowish green; dorsum of mesepisternum, and antealar ridge, black; antehumeral stripe bluish green, slightly wider than black humeral stripe; an elongate-oval black spot near posterior end of humeral suture; humeral stripe covering slightly more than lower half of mesepimeron, gradually widening anteriorly until it occupies entire width of this sclerite just before reaching the mesinfraepisternum, whose mesial third it traverses; entire metapleurite pale bluish green, save for a small, subreniform

black mark near posterior end of second lateral suture; lateral alar ridge pale, narrowly edged with black; mesosternum, metasternum, intersternum, and coxae pale flesh color, a small black spot between both meso- and metacoxae.

Femora and tibiae predominantly black on outer face, pale bluish green on inner face, an abrupt, narrow encroachment of pale into black near proximal end of femur; black extending slightly on trochanters; tarsi predominantly black, segments darker near joints than in middle; tooth of tarsal claw about one-third length of claw.

Abdomen predominantly black dorsally, first four segments with a considerable amount of blue laterally; 1 with an apical blue ring which encroaches on the black in a dorsal, semi-circularly bordered expansion; 2 blue basally, the basal border of the dorsal black trifid; 3 and 4 with dorsal black expanded to cover sides of apical fourth of these segments; 5, 6, and 7 almost entirely black; 8 and 9 blue with black ring extending from apical spine rows to intersegmental membrane; 10 black dorsally and laterally, blue ventrally, the apex of the notum produced into two posteriorly directed horns; appendages black; all other segments chiefly pale yellowish green ventrally; abdominal sternites, where visible, black.

Wings hyaline; veins and stigma black, a white pruinescent coating on the upper surface of R_1 in the hind wing just below stigma and first poststigmatal cell and along distal border of stigma; traces of similar pruinescence on border of upper face of stigma of fore wing; slight infuscation of wing membrane in small marginal cells between R_1 and M_{1a} of hind wing; petiolation falls short of Ac by about two-thirds the length of Ac; arculus arises at second antenodal.

Distal lobe of penis bifurcate, its ental surface heavily sclerotized; internal fold present.

Superior appendages broad, declivent, deeply excavated on posterolateral face; inferiors cylindrical, pointed, their points curved inward, in all about one-third longer than superiors.

Female unknown.

MATERIAL EXAMINED.—Type, ♂, and 5 paratypes, ♂; all from

Potrerrillos, Panamá, February 8, 1935, Wm. Clarke-MacIntyre, in the collection of Dr. Kennedy.

The paratypic males agree very closely with the description of the type. Differences are almost exclusively limited to extent and intensity of coloration. The following venational features may be mentioned: arculus arises at second antenodal in one-third of the series, just distal to this point in remaining two-thirds; in all fore wings the costal side of the quadrangle is one-third as long as the caudal side, in all hind wings one-half as long; postnodals in fore wing 11-13, average 11.3, in hind wing 9-12, average 10.1; in fore wing M_2 arises between fifth and sixth postnodals, in hind wing just proximal to fourth; in two-thirds of the examples M_{1a} arises at ninth postnodal in fore wing, at eighth in remaining third; it arises at seventh postnodal in hind wing; poststigmatal cells in fore wing 5-6, average 5.6, in hind wing 7-10, average 8.5. Abdomen 28-30 mm., average 29.2 mm.; hind wing 19.5-20 mm., average 19.6 mm.

This species is dedicated to Dr. Kennedy, in appreciation of many favors received at his hands.

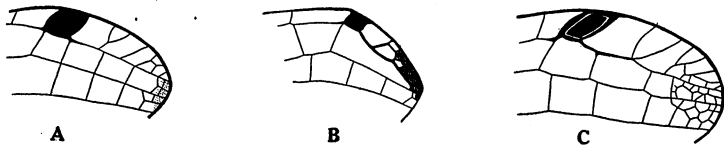


FIG. 1.—Hind wing tips.

- A. *Anisagrion kennedyi* new species, Potrerillos, Panamá.
- B. *Anisagrion truncatipenne* Calvert, Santa Lucia, Guatemala.
- C. *Apanisagrion lais* (Brauer), Jalisco, Mexico, region of Lake Chapala.

RELATIONSHIPS.—In the light of the Panamá material it is necessary to modify slightly the definition of *Anisagrion* as laid down by Selys. In his original description (Selys, 1876: 242) he stated that the wings are petioled to Ac, and that R_1 ("nerve mediana" of Selys) is strongly bent down at the stigma. Both of these conditions hold in *truncatipenne* (Fig. 1, B) and *alloppterum* (Calvert, 1901-1908: Pl. 5, Fig. 18). The

failure of *lais* to conform to the petiolation character was one of Kennedy's reasons for placing it in a new genus. In *kennedyi* wing petiolation falls short of Ae by about two-thirds the length of Ae ; and while R_1 is slightly declivent from the stigma (Fig. 1, *A*) it is not nearly so sharply bent down as in *truncatipenne* and *allopterum*. Yet there can be no doubt that *kennedyi* is congeneric with these two species, because of the very striking resemblance of appendages, general appearance, and certain venational features, such as occurrence of pruinosity in the stigmal area, and tendencies toward infuscation and sclerotization of wing membrane at the tip of the hind wings. The penis of *kennedyi* (Pl. I, Figs. 1-2) shows its close affinity to *truncatipenne* (Pl. I, Figs. 3-4) in the remarkable sclerotization of the inner surface of the distal lobe, and in its terminal bifurcation. It should be noted, however, that spines are present on the penis shaft of *truncatipenne*, but absent in *kennedyi*.

It seems advisable, therefore, to omit from the generic requirements the reference to wing petiolation, and of R_1 to state merely that it is declivent from the stigma, since the genus is maintained in sharp distinctness by the characters discussed above. *Apanisagrion* loses none of its individuality through this recharacterization, since it can be set off at once by differences of appendages, penis, and venation. The appendages of *lais* (Pl. II, Figs. 3, 6, 9) show especially sharp differences from those of *kennedyi* (Pl. II, Figs. 1, 4, 7), *truncatipenne* (Pl. II, Figs. 2, 5, 8), and *allopterum* (Calvert, 1901-1908: Pl. 5, Fig. 14).

Apanisagrion appears to be the closest relative of *Anisagrion*, affinities being displayed by wing tip modifications (Fig. 1, *C*) and by penial sclerotization (Pl. I, Figs. 5-6) similar in nature to that encountered in *kennedyi* and *truncatipenne*. The general form of the appendages in *Anisagrion* is highly suggestive of *Acanthagrion*, the resemblance to *adustum* (recorded from British Guiana) being quite noticeable. The latter genus is a more distant relative than *Apanisagrion*, apparently, since the penis in *Acanthagrion* has no

internal fold, and all known females bear a spine on the venter of the eighth segment, a structure not found in the females of *truncatipenne* and *allopterum*.

Within *Anisagrion*, *kennedyi* and *truncatipenne* appear to represent two extremes, with *kennedyi* showing only a hint of the wing tip modifications which give *truncatipenne* its bizarre appearance. The slight proliferation of marginal cells in the hind wing tip of *kennedyi*, attended by light infuscation of membrane, progresses through the further increase of marginal cells in *allopterum* to the densely reticulate and heavily sclerotized hind wing tip of *truncatipenne*.

The group is quite closely knit geographically as well as structurally. *Anisagrion truncatipenne* is known from Guatemala, *allopterum* from Mexico, Guatemala, and Costa Rica, and *kennedyi* from Panamá. *Apanisagrion lais* is known from Mexico (Morelos, Guerrero, Jalisco, Vera Cruz), and Guatemala.

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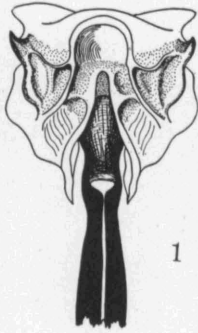
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PLATE I

Ventral and lateral views of penes.

- FIGS. 1-2. *Anisagrion kennedyi* new species, Potrerillos, Panamá, February 8, 1935.
- FIGS. 3-4. *Anisagrion truncatipenne* Calvert, Santa Lucia, Guatemala, January 31, 1905.
- FIGS. 5-6. *Apanisagrion lais* (Brauer), Jalisco, Mexico, region of Lake Chapala, November 29, 1923.



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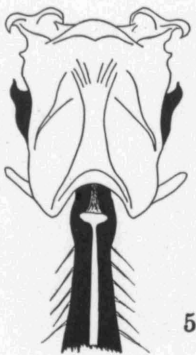
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PLATE II

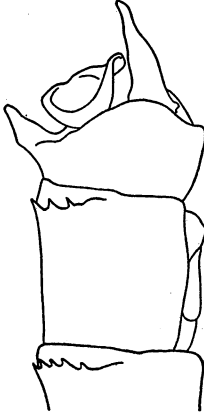
Male abdominal appendages, three views.

FIGS. 1-3, lateral aspect; FIGS. 4-6, terminal aspect;
FIGS. 7-9, dorsal aspect.

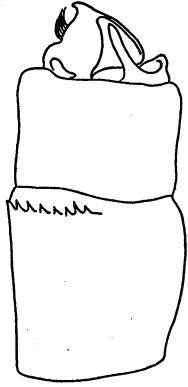
- FIGS. 1, 4, 7. *Anisagrion kennedyi* new species, Potrerillos, Panamá,
February 8, 1935.
- FIGS. 2, 5, 8. *Anisagrion truncatipenne* Calvert, Santa Lucia, Guatemala,
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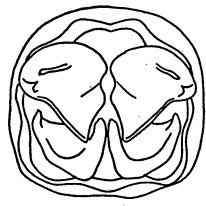
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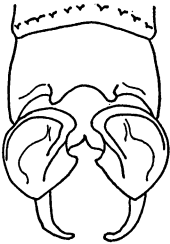
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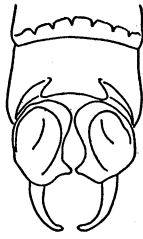
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