Odonatologica 17(4): 409-418 *December 1, 1988*

MICRATHYRIA RINGUELETI SPEC. NOV., A NEW DRAGONFLY FROM ARGENTINA AND ITS LARVA (ANISOPTERA: LIBELLULIDAE)*

A. RODRIGUES CAPITULO
Instituto de Limnologia "Dr Raúl A. Ringuelet", Facultad de Ciencias Naturales y Museo, Universidad Nacional de La Plata, CC 55, AR-1923 Berisso, Buenos Aires, Argentina

Received January 8, 1988 / Revised and Accepted March 10, 1988

The adult and final instar larva are described and illustrated (holotype ♂, allotype ♀, paratypes: Punta Lara Forest and Laguna Chascomús, Buenos Aires prov., 30-XI-1984). The new sp. is related to the "*didyma-hipodidyma-dythemoides*--group" of CALVERT (1909, *Ann. Carneg. Mus.* 6: 73-20) and RIS (1911, *Collns zool. de Sélys Longchamps* 12: 385-527), but it is distinguished by the genitalia, wing venation and pattern of thoracic and abdominal coloration.

INTRODUCTION

CALVERT (1909), RIS (1911), SJÖSTEDT (1918), SANTOS (1945a, 1945b, 1946a, 1946b, 1946c, 1947, 1949, 1952, 1953, 1954, 1968, 1972, 1978, 1982), FRASER (1947), GEIJSKES (1962), PAULSON (1977), and JURZITZA (1981) have listed or described 32 species of *Micrathyria* in the neotropical region, 15 of which have been reported in Argentina.

In the following description a new species of *Micrathyria* is introduced. The studied specimens were collected in three neighboring locations of Buenos Aires province (Argentina) from 1979 to 1985.

M. ringueleti sp. could belong to the "*didyma-hypodidyma-dythemoides* group" of CALVERT (1909), and the "IA group" of RIS (1911) for it has two

* Contribution No. 350 from the "Instituto de Limnología Dr. Raúl A. Ringuelet". Fac. Cs. Nat. La Plata- CONICET.

cells between the hind angle of the triangle and the midrib of the anal loop, the discoidal triangle of the front wing two-celled, and the posttriangular field of the hind wing without a single cell reaching from MA to CuP. Anyway this species can be distinguished from the other species of the mentioned group by its abdominal genitalia (segm. 2), wing venation and pattern of thoracic and abdominal coloration.

Etymology. — The species is named in homage to Dr Raúl Adolfo Ringuelet (1914-1982), eminent limnologist of South America and founder of the "Instituto de Limnología de La Plata".

MICRATHYRIA RINGUELETI SPEC. NOV.

Figures 1-16, 27-32

Material examined and deposited in the Museo de La Plata Collection of Arthropods (UNLP). — **Holotype** ♂: Argentina, Buenos Aires Prov., Marginal Forest of Punta Lara, 30-XI-1984, A. Rodrigues Capítulo leg. — **Allotype** ♀: same as holotype. — **Paratypes:** 9 ♂ same location and date as holotype, A. Rodrigues Capítulo & J. Muzón leg.; 1 ♂, 1 ♀ same location as holotype, 14-I-1985, A. Rodrigues Capitulo & J. Muzón leg.; 10 ♂, 2 ♀, ex larvae, Buenos Aires Prov., Chascomús Pond, 5-IX to 17-XI-1979 (Laboratory emergence: 10-XI-1979 to 12-I-1980), A. Rodrigues Capítulo leg.; 2 ♂, 1 ♀, Chascomús Pond, L.A. Bulla leg. (without date); 1 ♀, Buenos Arires Prov., Los Talas, Berisso, 4-X-1979, L. Fernandez leg.; 1 ♀, Buenos Aires Prov., Ayo. Zapata, Berisso, 5-X-1979, A. Estevez & E. Domissi leg.

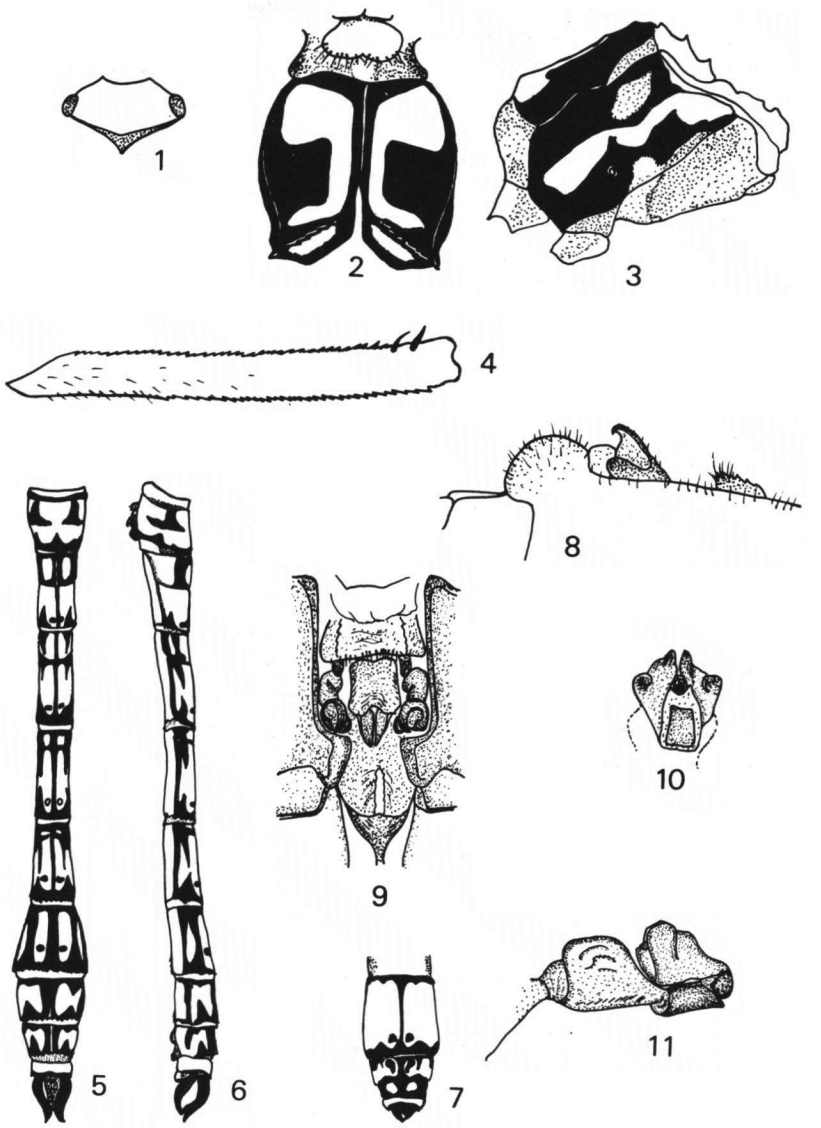
HOLOTYPE ♂ — Dimensions (mm): Total length 37.2, without appendages. — Fore wing 29.8; — hind wing 28.7. — Abdomen, including appendages 26.2; — appendages 1.5. — Hind femur 5.9.

Head. — Labium and labrum pale yellow-green. Clypeus, middle anterior surface of the frons pale greenish blue and basally dark metallic blue. Antennae brown-black. Vertex centrally greenish blue and bordered with metallic brownish (Fig. 1). Occiput brown with pale greenish spots at the middle rear margin; rear of head brown with a lateral yellow stripe. Dorsal surface of the eyes brown (yellow in life); their lateral and inferior surfaces green-greyish. Postgenae pale greenish blue above and darker below.

Prothorax (Fig. 2). — Brown; posterior lobe pale brown (yellow green at base), bilobed, and the hind margin bearing a fringe of long white hairs. Pterothorax (Fig. 2, 3): largely brown. The yellow-green markings are as follows: median of antealar sinus, a narrow line bordering its front and paralleling the dorsal carina with its lower third widening. A sinuose mesepimeral-metepisternal stripe widening inferiorly. Humeral and lateral sutures pale brown. Metepisternum dark brown with a paler spot at the middle portion; metepimeron greenish.

Legs. — Mostly black with basal two-thirds of the femur pale greenish brown. Spination on the outer angle of the femur like in Figure 4; its spines all short except the last two (Fig. 4).

Wings. — Hyaline with dark brown basal spot reaching up to about the half of the proximal portion of the first antenodal between subcostal and R + M; a



Figs 1-11. *Micrathyria ringueleti* sp. n., holotype ♂ and allotype ♀: (1) Vertex, dorsal view; — (2-3) Color pattern of male synthorax, dorsal (2) and lateral (3) view; — (4) Hind femur, external view; — (5-6) Male abdomen, dorsal (5) and lateral view (6); — (7) Tip of female abdomen, dorsal view; — (8-9) Male accessory genitalia, lateral (8) and ventral (9) view; — (10-11) Penis, posterior (10) and lateral (11) view.

small basal spot present between Cu and A. Venation black; pterostigma dark brown (2.7-3.0 mm); membranule white.

Wing venation. — Holotype; fore wing: formula nodal 6-8½:8-7; hind wing 7-6:6-7. Paratypes: males; fore wing: postnodals left 6 (59%), 7 (32%), 8 (9%); right 6 (41%), 7 (50%), 8 (9%); antenodals left: 7½ (22%), 8 (18%), 8½ (54%), 9 (4%); right 7½ (63%), 8 (18%), 8½ (18%). In four males, last antenodal in fore wing complete. Hind wing: postnodals left 6 (29%), 7 (50%), 8 (19%); right 6 (14%), 7 (59%), 8 (27%); antenodals left 6 (14%), 7 (59%), 8 (27%); right 6 (95%), 7 (5%). Triangle in forewing crossveined (100%) and in hindwing free (100%). Rspl in forewing 6-9 cells; in hindwing 6-10 cells. Forewing subtriangle 3-celled (90%), 2-celled (10%); 2 bridge crossveins (100%); discoidal field with 3-cell rows. Hindwing with anal loop well developed; 2 cells between the hind angle of the triangle and midrib of the anal loop. Post triangular field of hindwing without single cell reaching from MA to CuP; 3 rows of cells between anal loop and hind margin (Fig. 32).

Abdomen. — Holotype: Strongly narrowed at segments 3 to 6; brown with largely yellow-green pattern like in Figures 5, 6. In mature individuals generally whole abdomen with pruinescence.

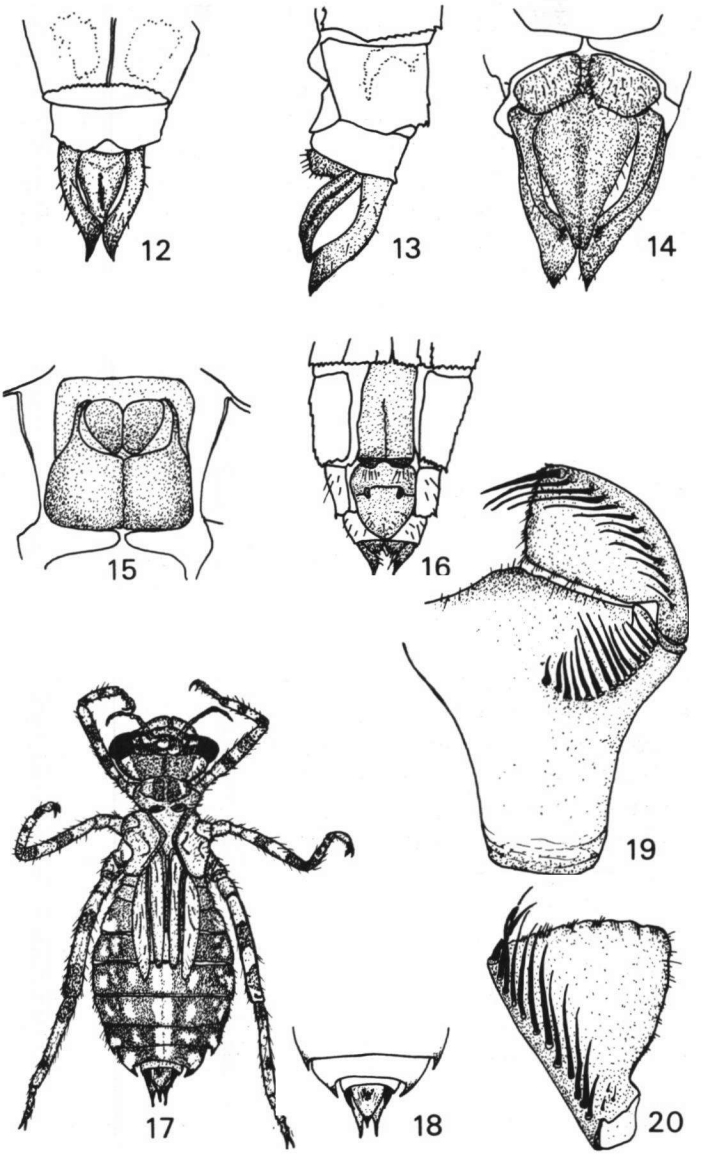
Young specimens lack pruinescence and the markings are pale yellow-green. Width of 4th segment 1.55 mm. Genitalia of abdominal segment 2 with the genital lobes rounded in lateral view (Fig. 8), and slightly rectangular in ventral view (Fig. 9). Hamules with the inner branch (IB) much larger than the outer branch (OB), curved and projecting posteroventrad, exceeding the genital lobes in height (Fig. 8). Anterior lamina smaller in lateral view, its posterior margin subconcave (Fig. 9). Gonapophysis according to PRASAD, 1964 on sternite IX tapering posteriorly (Fig. 15). Penis brown; posterior lobe subquadrate (white) in ventral view, bordered with greyish. Medial process single and little developed; lateral lobes (LL) rounded and covering the medial process; opposite angle to lateral lobes straight; laterally to LL a broad process is present (Fig. 10, 11, 27-30). Superior anal appendages black; length 1.5 mm, as long as 9+10, convex in dorsal view, each tapering distally, not divergent, with pointed tips (Fig. 12); in lateral view curved below with the terminal portion (after tooth) straight (Fig. 13). Inferior appendix triangular, reaching the angle of superiors (Fig. 14).

ALLOTYPE ♀ — Dimensions: Total length 37.2 mm with appendages. — Fore wing 28.9 mm; — hind wing 25.1 mm. — Abdomen 25.3 mm (including anal appendages).

Head. — Mostly as in male; upper part of frons, vertex and occipital triangle brown.

Thorax. — With similar pattern as the male.

Wing venation. — Allotype, nodal formula, fore wing 7-8:8½-6; hind wing 7-6:6-7; in paratype females; fore wing: postnodals left 6 (43%), 7 (57%); right 6 (57%), 7 (29%), 8 (14%); antenodals left 7 (14%), 7½ (14%), 8 (43%), 8½ (29%);



Figs 12-20. *Micrathyria ringueleti* sp. n.: (12-14) Male appendages in dorsal (12), lateral (13) and ventral (14) view; — (15) Gonapophysis, ventral view (segment IX); — (16) Vulvar lamina; — (17-20) Larva, final instar: (17) dorsal view, — (18) tip of abdomen, dorsal view, — (19) lateral and mental setae, inner side, — (20) left lateral lobe of mentum.

right 7½ (14%), 8 (43%), 8½ (43%); hind wing: postnodals left 6 (57%), 7 (29%), 8 (14%); right 6 (14%), 7 (86%); antenodals left 6 (100%); right 5 (14%), 6 (71%), 7 (15%). Triangle in forewing crossveined (100%) and free in hind wing (100%). Rspl in front wing 10-11 cells, in hind wing 9-11 cells.

Abdomen. — Broader than male and less pruinose; width of 4th segment 2.1 mm; without narrowing in tergites 3 to 6, 8th tergum yellow with two brown spots in dorsal view (Fig. 7); vulvar lamina very short with the hind margin bilobed and reaching the proximal extreme of 9th sternum (Fig. 16) as shown in CALVERT (1909) for *M. catenata.*

LARVA (FINAL INSTAR)

Figures 17-26

Material examined. — 12 exuviae (in alcohol) of 10 ♂ and 2 ♀ emerged in laboratory, (references in adult description); 2 final instar larvae, Chascomús Pond, 2-VIII-1979, Rodrigues Capítulo & Domissi leg., Museo de La Plata, coll. of Arthropods (UNLP).

Dimensions (mm). — Body length 10.8; — length of abdomen (including caudal appendages) 10.4; — maximum abdomen width at 6th segment 6.7; — length caudal appendages: superior 0.9, — laterals 0.7, — inferiors 1.4; — maximum head width 5.2 (4.8-5.4), — length 3.5; — posterior wing cases 5.8, — anterior pair 6.1.

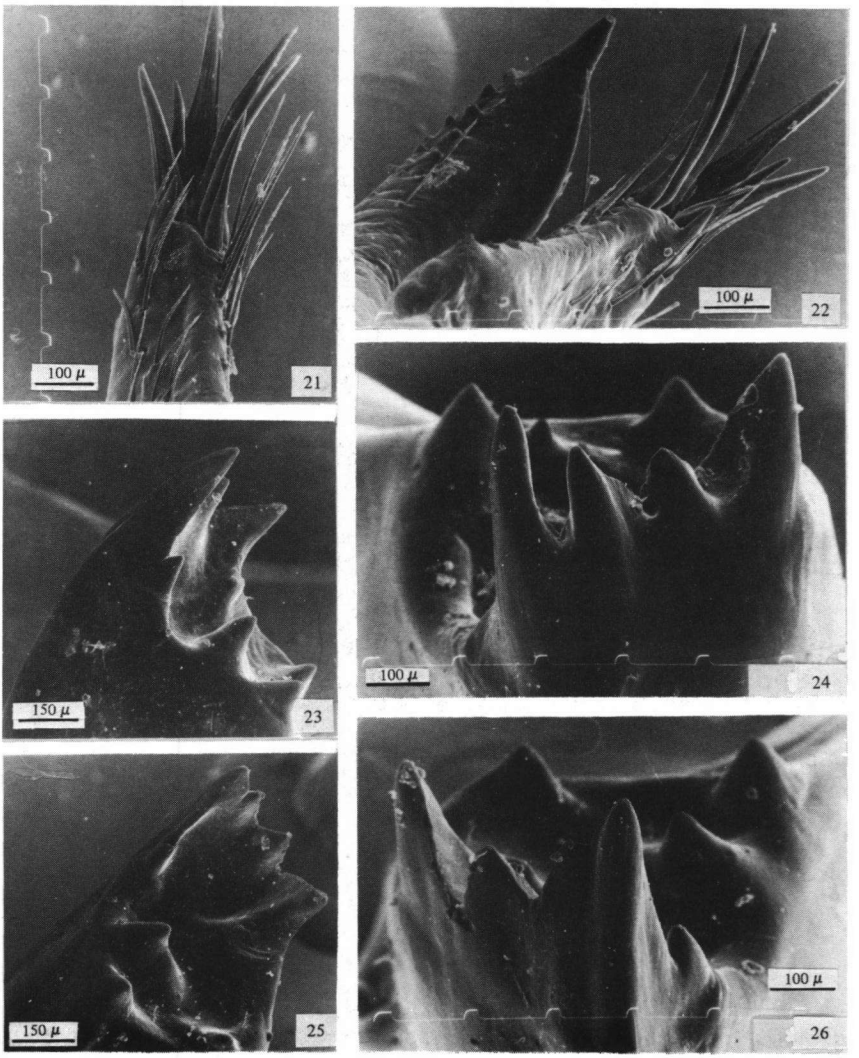
Body green in life (brown in alcohol) with pale yellow markings. Head pentagonal in shape like *M. hypodidyma* (SANTOS, 1968); antennae filiform, 7-segmented (2.9 mm), lengths of segments: 0.20-0.30-0.65-0.35-0.40-0.50-0.50 mm; rear side of head concave. Labium with 11 lateral and 14 mental setae, length of prementum 4.1 mm, width 4.3 mm (Figs 19-20); 7-8 crenulations on internal margin of lateral lobe; each with a long spine below and others decreasing dorsally.

Mandibular formula (Figs 23-26) (according to WATSON, 1956):

$$\frac{\text{L 1 2 3 4 O a b' b}}{\text{R 1 2 3 4 y a b d}}$$

Left (Fig. 24) — (A) (1) b > a > b'
(2) All the molars are pointed. b' is not in line with a and b.
(B) (1) None of the incisors is smoothly tapered.
(2) 4 > 3 > 1 > 2
(3) the cleft between the incisors 3 and 4 is more prominent than the others and presents a cylindrical shape.
(4) 3 > 1 > 4 > 2

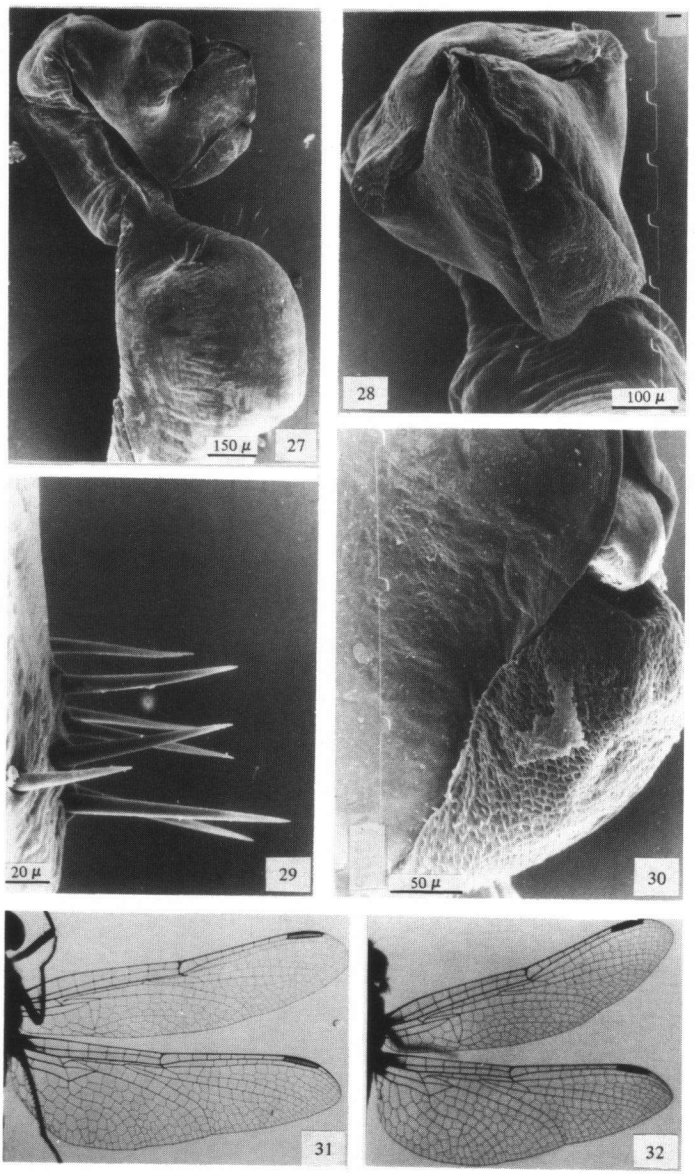
Right (Figs 23, 25, 26) — (A) (1) d > b > a
(2) The molars are short and stout, with broad bases. a is blunt; b and d are pointed.
(B) (1) The incisors are short and pointed.
(2) 4 + 3 > 2 > 1
(3) The separation between 3 and 4 is not as pronounced as on the left.
(4) The base of 3 + 4 = equal to that of 1, and broader than 2.



Figs. 21-26. *Micrathyria ringueleti* sp. n.: (21-22) Maxillae, right (21) and left (22); — (23-26) Mandibules: right, inferior view (23), left, distal view (24), right internal view (25) and right, incisors, postero-distal view (26). — [Scanning micrographs].

The head presents two dorsally brown bands running inwards from the internal margin of the eyes, whose posterior parts form a particular central figure (Fig. 17).

Wing cases almost parallel and the hind pair reaching the middle of the 6th



Figs 27-32. *Micrathyria ringueleti* sp. n.: (27-30) Penis, viewed from the right side (27), — segment IV, posterior view (28), — spinulation of hood of segment I (29), — and posterior lobe and medial process, in profile (30); — (31-32) Male (31) and female (32) wing venation. — [Figs 27-30 are scanning micrographs].

tergum. Legs: pale yellow (transparent) with two pigmented rings on both femora and tibiae (Fig. 17); tarsal segments with the following lengths in mm: 1st leg. 0.20-0.80-1.00; 2nd leg. 0.35-0.95-1.00; 3rd leg. 0.50-1.20-1.40.

6th to 9th abdominal tergum green with paler middorsal stripe and laterodorsal spots; 1st to 5th, below of the wing cases, without pigmentation; other marks as in Figure 17. Lateral spines on 9th segment (0.4 mm) half of its dorsal length; those on 8th smaller (0.3 mm) (Fig. 18).

The larvae were collected from littoral vegetation (*Ceratophyllum demersum* and *Azolla filiculoides*) in lentic waters of Laguna Chascomús. Other larvae of Anisoptera present in the same pond were *Aeshna bonariensis, Tauriphila risi, Erythrodiplax corallina, E. nigricans, M. hypodidyma* as well as various species of Zygoptera.

DISCUSSION

The venation of *M. ringueleti* is related to that of the *M. hypodidyma* group by the intercalar cells between A_2 and the midrib of the anal loop; it differs from this group by the abdominal genitalia of the 2nd segment according to SANTOS (1954). The inner branches of *M. ringueleti* are projected posteroventrad and the outer branches are stout; the penis is also different from that of the other species; the pattern of thoracic coloration is characterized by an antehumeral stripe wide at the base and a sinuose pale epimeral stripe.

Few larvae are know for *Micrathyria: M. didyma, M. aequalis, M. hageni, M. dissocians* (NEEDHAM, 1943), *M. artemis, M. atra, M. hypodidyma* (SANTOS, 1968, 1971, 1978) and now *M. ringueleti.*

REFERENCES

CALVERT, P.P., 1909. Contributions to a knowledge of the Odonata of the neotropical region, exclusive of Mexico and Central America. *Ann. Carneg. Mus.* 6(1): 73-280.

FRASER, F.C., 1947. The Odonata of the Argentine Republic. I. *Acta zool. lilloana* 4: 427-461.

GEIJSKES, D.C., 1962. Three new species of Micrathyria. *Stud. Fauna Suriname* 17: 70-81.

JURZITZA, G., 1981. Lista provisional de los Odonata del Parque Nacional Iguazú, Provincia de Misiones, República Argentina. *Notul. odonatol.* 1(7): 117-118.

NEEDHAM, J.G., 1943. Life history notes on Micrathyria (Odonata). *Ann. ent. Soc. Am.* 36: 185-189.

PAULSON, D.R., 1977. Odonata. *In:* S.H. Hurlbert, [Ed.], Biota Acuatica de Sudamerica austral, pp. 170-184, San Diego St. Univ., San Diego (Calif.).

PRASAD, S.N., 1964. The morphology of the male reproductive organs of Bradinopyga geminata Rambur (Libellulidae: Odonata). *Ann. Zool., Agra* 4(12): 123-144.

RIS, F., 1911. Libellulinen. *Collns zool. de Sélys Longchamps* 12: 385-527.

SANTOS, N.D., 1945a. Contribuiçao ao conhecimento da fauna de Pirassununga, Estado de Saõ Paulo. *Bolm Mus. nac. Río de J.* (Zool.) 48: 1-7.

SANTOS, N.D., 1945b. Redescriçao de Micrathyria artemis (Selys, ms) Ris, 1911. Odonata Libellulidae. *Bolm Mus. nac. Río de J.* (Zool.) 49: 1-5.

SANTOS, N.D., 1946a. Contribuiçao ao conhecimento da fauna de Pirassununga (S. Paulo). *Summa bras. Biol.* 1(2): 1-17.

SANTOS, N.D., 1946b. Odonata coligidos no Paraguay pela Missao Cientifica Brasileira no ano de 1944, con notas sobre Micrathyria longifasciata, e Tauriphila australis. *Summa bras. Biol.* 1(6): 109-116.

SANTOS, N.D., 1946c. Micrathyria spuria (Selys, 1900) e Micrathyria hesperis Ris, 1911, um caso evidente de micro-evoluçao. *Revta Ent. Rio de J.* 17(1/2): 233-243.

SANTOS, N.D., 1947. Micrathyria borgmeieri n. sp. (Odonata Libellulidae). *Revta bras. Biol.* 7(2): 215-218.

SANTOS, N.D., 1949. Contribuiçao ao conhecimento da fauna de Pirassununga. 6. Descriçao da femea de Micrathyria catenata Calv., 1909 e notas sobre M. ocellata dentiens Calvert, 1909. *Revta Ent. Rio de J.* 20(1/3): 159-164.

SANTOS, N.D., 1952. Redescriçao de Micrathyria hippolyte Ris, 1911 (Odonata Libellulidae). *Dusenia* 3(3): 211-214.

SANTOS, N.D., 1953. Revisao critica de Micrathyria ungulata Förster, 1907 (Libellulidae Odonata). *Bolm Mus. nac. Rio de J.* (Zool.) 119: 1-14.

SANTOS, N.D., 1954. Revisao de Micrathyria didyma (Selys) e suas corelatas (Libellulidae Odonata). *Archos Mus. nac. Rio de J.* 42: 491-506.

SANTOS, N.D., 1968. Contribuiçao ao conhecimento da fauna do Estado da Guanabara. 62. notas sobre a ninfa e o imago de Micrathyria hypodidyma Calvert, 1906. *Atas Soc. Biol. Rio de J.* 11(5): 195-197.

SANTOS, N.D., 1972. Contribuiçao ao conhecimento da fauna do Estado da Guanabara e arrededores. 80. Descriçao da ninfa de Micrathyria artemis (Selys) Ris, 1911 (Odonata Libellulidae). *Atas Soc. Biol. Rio de J.* 15(3): 141-143.

SANTOS, N.D., 1978. Contribuiçao ao conhecimento da fauna do Municipio do Rio de Janeiro, RJ e arrededores. 85. Descriçao da ninfa de Micrathyria atra (Martin) 1897 Calvert, 1906 (Odonata Libellulidae). *Atas Soc. Biol. Rio de J.* 19: 17-18.

SANTOS, N.D., 1982. Odonata. *In:* S.H. Hurlbert, G. Rodriguez & N.D. Santos, [Eds], Aquatic biota of tropical South America, Pt 1., pp. 64-85, San Diego St. Univ., San Diego (Calif.).

SJÖSTEDT, Y., 1918. Wissenschaftliche Ergebnisse der Schwedischen entomologischen Reise des Herrn Dr. A. Roman in Amazonas 1914-1915. *Arch. Zool.* 15: 1-54.

WATSON, M.C., 1956. The utilization of mandibular armature in taxonomic studies of anisopterous nymphs. *Trans. Am. ent. soc.* 81: 155-205.