

STUDIES OF NEOTROPICAL CADDISFLIES XXIII: NEW GENERA FROM THE CHILEAN REGION

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Abstract.—*Schajovskoya neuquenensis*, n. gen., n. sp. and *Androchorema chilense*, n. gen., n. sp., belonging to the family Rhyacophilidae (Hydrobiosinae) from Argentina and Chile, respectively, are described. The new genus *Alloecentrellodes* with the new species *obliquus* and *elongatus* is described from Chile. The genus is placed in the Helicophidae, to which the Chilean genera *Austrocentrus* and *Microthremma* are also transferred, thereby establishing the presence of this family in the New World for the first time. All new genera and species are described, figured, and notes on habitat given.

As a result of several recent collecting trips into Chile and Argentina, a number of interesting undescribed caddisflies have been discovered. This opportunity is taken to make known those that represent undescribed genera as well as species.

The first two genera are clearly representatives of the family Rhyacophilidae, subfamily Hydrobisinae. The genus *Schajovskoya* (named in memory of Don Sergio Schajovskoy, who was so very helpful to us in our stay at San Martin de los Andes) is a very close relative of the Chilean *Para-chorema*. The second rhyacophilid is *Androchorema*, but its relationship is very unclear although it has affinities to *Rheochorema* which is known from Chile and Argentina.

The last, and most interesting new genus is *Alloecentrellodes*. This genus and several others from Chile are very closely related to certain Australian-New Zealand genera currently placed in the Helicophidae, although previously placed in the Beraeidae. I have seen a few larvae from Chile that bear a strong resemblance to beraeids. Until these can be associated, described and their intimate relationships worked out, it seems best on the basis of adult characteristics to place these genera in the Helicophidae recognizing the close relationship to the Beraeidae. This is the first record of the Helicophidae from the New World.

The females and larvae of *Schajovskoya* are described herein, however, these stages are unknown for the other two genera.

Family Rhyacophilidae
Schajovskoya, new genus

Adult.—Spurs: 0, 4, 4. Forewing with R_{2+3} and R_{4+5} very short, branched at same level; M_{1+2} and M_{3+4} branched midway to wing margin. Hindwing with R_{2+3} apparently arising from R_4 . Male abdomen without internal sacs or processes from the fifth sternum; sixth and seventh sterna with terete posteromesal processes. Male genitalia: Tenth tergum long, nearly terete, sclerotized basolaterally; paracercus platelike, filicercus long, bearing basodorsally the cercus; clasper two-segmented with second segment borne dorsomesally; aedeagus tubular basally, bearing a long slender central structure, divided apically into 2 asymmetrical processes. Female genitalia laterally compressed into a rather thin elongate structure.

Larva.—Head elongate, with dark muscle scars on a pale background. Mandibles with dorsal and ventral carinae, each bearing teeth. Prosternum lacking sclerite. Foreleg with femur elongate, apicoventral process long, narrow; tibia and tarsus fused; claw with a very small basal seta. Mid and hindlegs similar, rather short, with segments broad and subequal in length; claw with basal seta very large, and angled. Lateral sclerite of anal proleg about twice as long as broad; claw with basoventral seta very large and angled.

Type-species.—*Schajovskoya neuquenensis*, new species.

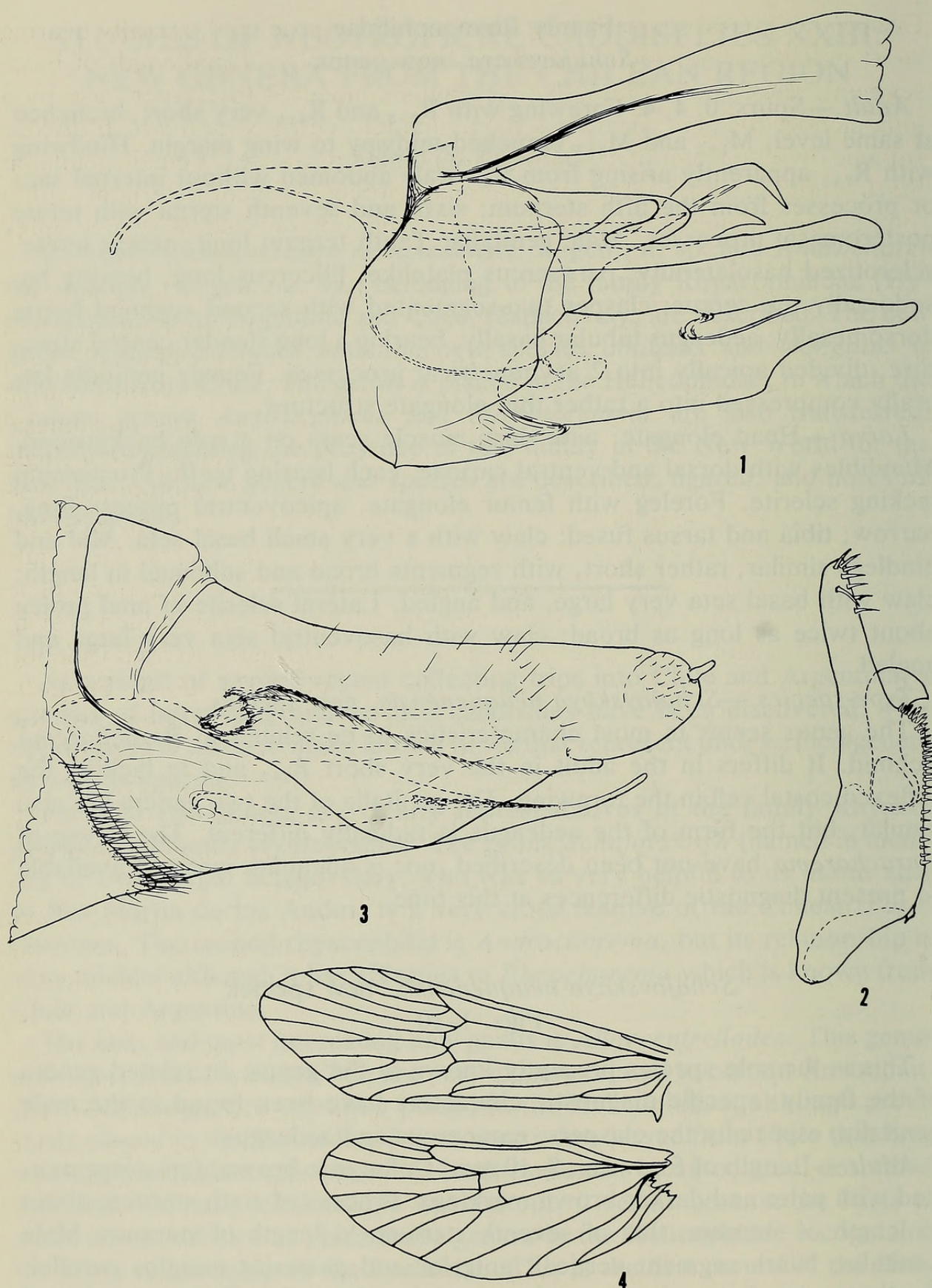
The genus seems in most characteristics to be related to *Parachorema* Schmid. It differs in the adult in the very short R_{2+3} and in lacking the reflexed costal cell in the forewing. The genitalia of the two genera are also similar, but the form of the aedeagus is radically different. The larvae of *Parachorema* have not been described, nor is adequate material available to present diagnostic differences at this time.

Schajovskoya neuquenensis, new species

Figs. 1–10

This is the sole species presently known in the genus. In related genera of the family, specific diagnostic characters have been found in the male genitalia, especially the claspers, paracercus and aedeagus.

Adult.—Length of forewing, 9–10 mm. Color pale brown, forewings mottled with paler and darker brown markings. Process of sixth sternum about $\frac{2}{3}$ length of sternum, that of seventh sternum $\frac{1}{4}$ length of sternum. Male genitalia: Ninth segment vertical, anterior and posterior margins parallel. Tenth tergum long, slender, sclerotized basolaterally. Paracercus broad basally with a short basoventral lobe, apex evenly rounded. Filicercus long and membranous bearing basodorsally an elongate membranous cercus.



Figs. 1-4. *Schajovskoya neuquenensis*: 1, male genitalia, lateral; 2, clasper, ventral; 3, female genitalia, lateral; 4, wings.

Clasper with basal segment long, apex narrowly produced, mesally bearing short pointed setae; second segment borne dorsally at midlength of basal segment, apex hooked mesally. Aedeagus connected to clasper base by a long slender filament; bearing a long, slender central strand which divides subapically into a pair of asymmetrical, pointed processes. Female genitalia: Sixth sternum with a terete posteromesal process; seventh sternum with a minute nail-like lobe. Terminal segments long, compressed, with a complex internal structure.

Larva.—Length of prepupa, 7 mm. Head pale yellowish, darkened posteriorly between dark brown muscle scars, dark color extending anteriorly along ecdysal lines; venter extensively darkened with a row of small, dark, muscle scars on each side posteriorly. Left mandible with ventral carina bearing 2 approximate apical teeth, dorsal carina bearing a large apicomesal tooth and a small tooth at base of central cusp; right mandible with a single large tooth at apex of both dorsal and ventral carinas. Pronotum pale yellowish, posterior and lateral margins black; muscle scars on postero-lateral quadrants dark brown, slightly darkened around scars. Legs pale yellow, points of articulation black. Ninth tergite pale brown. Lateral plate of anal proleg, black basally, infusate ventrolaterally; claw golden brown.

Material.—Holotype, male: Argentina, Prov. Neuquen; Arroyo Culebra, 20 km south of San Martin de los Andes, 2 Feb. 1974, O. S. Flint, Jr. USNM Type 76136. Paratypes: same data, 1♂ metamorphotype; Rio Nonthue, Estacion Forestal Pucara, 24 Feb. 1978, C. M. & O. S. Flint, Jr., 1♂; Rio Aseret, near Lago Currhue, 23 Jan. 1974, O. S. Flint, Jr., 1♀, 1♂ metamorphotype. Prov. Chubut; 8 km south Hoyo de Epuyen, 10 Feb. 1974, O. S. Flint, Jr., 1♂, 1♀ metamorphotypes. Other: Same data as holotype, 1 prepupa, 5 pupae; same data as Rio Aseret, 1 pupa.

Habitat.—The immature stages, actually all pupae or prepupae, have been taken on 3 occasions. Both the Rio Aseret and Arroyo Culebra (as well as the Rio Nonthue where a male was swept) are virtually identical in gross appearance (Fig. 22). These streams are about 5 to 10 meters wide, by 3–5 decimeters in depth except in deeper pools. The bottom is boulders, rubble, gravel, and sand with some rocks overgrown by moss. The water is cool and clear, fast flowing, although not of an exceptional gradient. The stream 8 km south of Hoyo de Epuyen was smaller, only 2–3 meters wide by a decimeter or two deep, and the stones had a slimy coating, otherwise it was similar to the other localities.

Androchorema, new genus

Adult.—Spurs: 2, 4, 4. Forewing with R_{2+3} and R_{4+5} very short, branched at nearly same level; crossveins present (discoidal cell present); M_{1+2} very long, branched midway to wing margin, M_{3+4} short, branched soon after

origin; with 2 m-cu crossveins. Hindwing with radial and medial systems disrupted by the presence of an elongate androconial structure near the anterior margin at midlength; with a hair pencil from costal margin just basad of androconia. Male lacking all process from the abdominal sterna. Male genitalia: Tenth tergum a simple, terete, membranous lobe. Cercus button-like, filicercus elongate, paracercus elongate. Clasper two-segmented, second segment small and poorly set off. Aedeagus with a long, spine-like ventral lip and a simple mesal process.

Type-species.—*Androchorema chilense*, new species.

The relationship of this genus is rather unclear. The forewing in its venation is nearly identical to that of *Rheochorema*, while the aberrant structure of the hindwing with its androconia is unique. The form of the genitalia, however, seems radically different in the two genera. The genitalia are more readily homologized with *Stenochorema*, but this genus lacks the second clasper segment, and has a radically different venation. At this point it seems safest to relate the genus to *Rheochorema*. The female and immature stages are unknown.

Androchorema chilense, new species

Figs. 11–13

As this is the sole species known in the genus, it is not known what the specific characteristics are, but they may be looked for in the male genitalia especially.

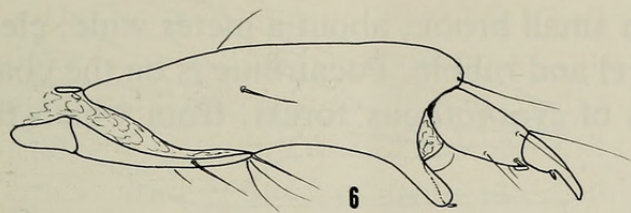
Adult.—Length of forewing, 10 mm. Color dark brown, legs pale brown; forewing mostly denuded, membrane dark brown. Male genitalia: Ninth segment with anterior and posterior margins nearly parallel. Tenth tergum, membranous, elongate. Paracercus clavate, decumbent. Filicercus elongate, slightly curved. Cercus button-like. Clasper with basal segment elongate, broad basally, tapering apicad, inner face basally heavily sclerotized, and bearing a pair of small lobes submesally, with a distinct mesal shelf-like expansion ending in a short, finger-like lobe; apical segment small, poorly set off from apex of basal segment, terete. Aedeagus with a long, slender ventral lobe curved between bases of claspers, and a single, decurved, mesal, rod-like process.

Material.—Holotype, male: Chile, Prov. Osorno; Pucatrihue, 26–30 Jan. 1978, C. M. & O. S. Flint, Jr. USNM Type 76137.

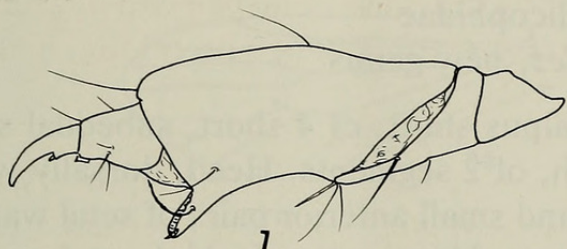
Habitat.—The unique specimen was undoubtedly captured at an ultra-

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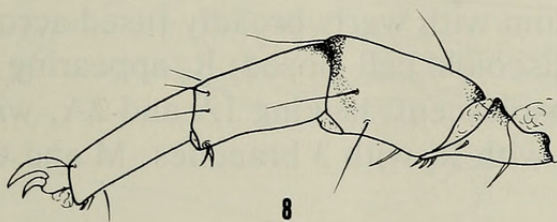
Figs. 5–13. *S. neuquenensis*: 5, larval head and pronotum, dorsal; 6, larval foreleg, anterior; 7, same, posterior; 8, larval midleg, posterior; 9, larval mandibles, ventral; 10, larval anal proleg, lateral. *Androchorema chilense*: 11, wings; 12, male genitalia, lateral; 13, same, ventral.



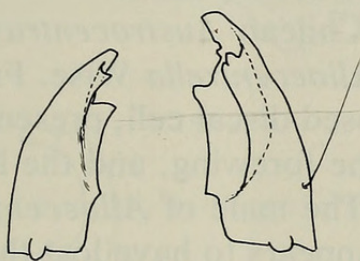
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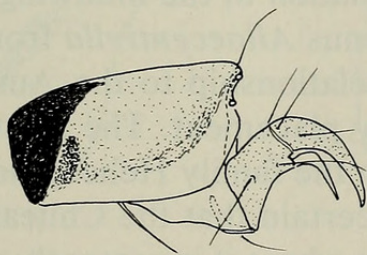
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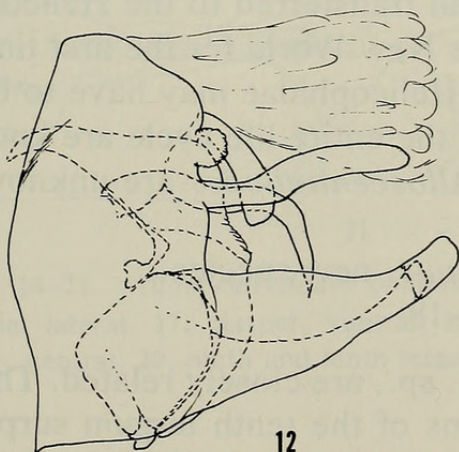
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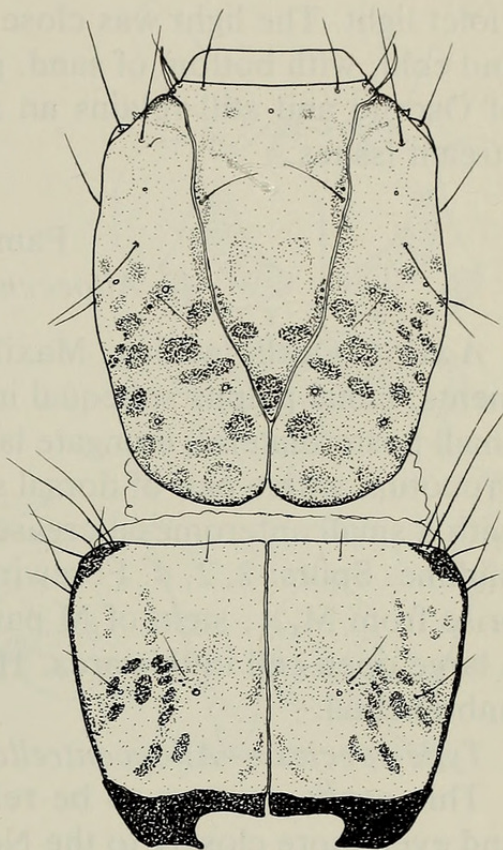
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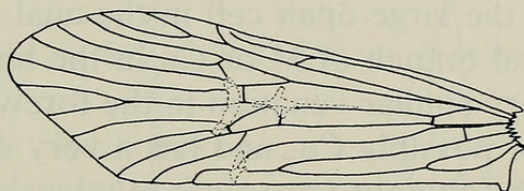
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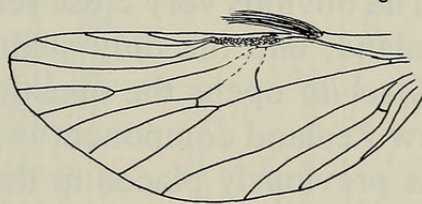
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11



13

violet light. The light was close to a small brook, about a meter wide, clear and cold, with bottom of sand, gravel and rubble. Pucatrihue is on the coast of Osorno and still retains an area of *Nothofagus* forest, from which the stream issues.

Family Helicophidae
Alloecentrellodes, new genus

Adult.—Ocelli lacking. Maxillary palpus short, of 4 short, subequal segments; labial palpus subequal in length, of 2 segments. Head, dorsally with small posterolateral, elongate lateral, and small anterior pairs of setal warts. Pronotum with a pair of dorsal setal warts. Mesoscutum lacking setal warts, with a small anteromesal crease; scutellum with warts broadly fused across midline. Spurs: 2, 2, 4. Forewing with discoidal cell closed; R_5 appearing to arise from M_{1+2} , stem of M partially obsolescent; lacking 1A and 2A, with a large open cell in this area. Hindwing with R_s with 3 branches, M and Cu unbranched.

Type-species.—*Alloecentrellodes obliquus*, new species.

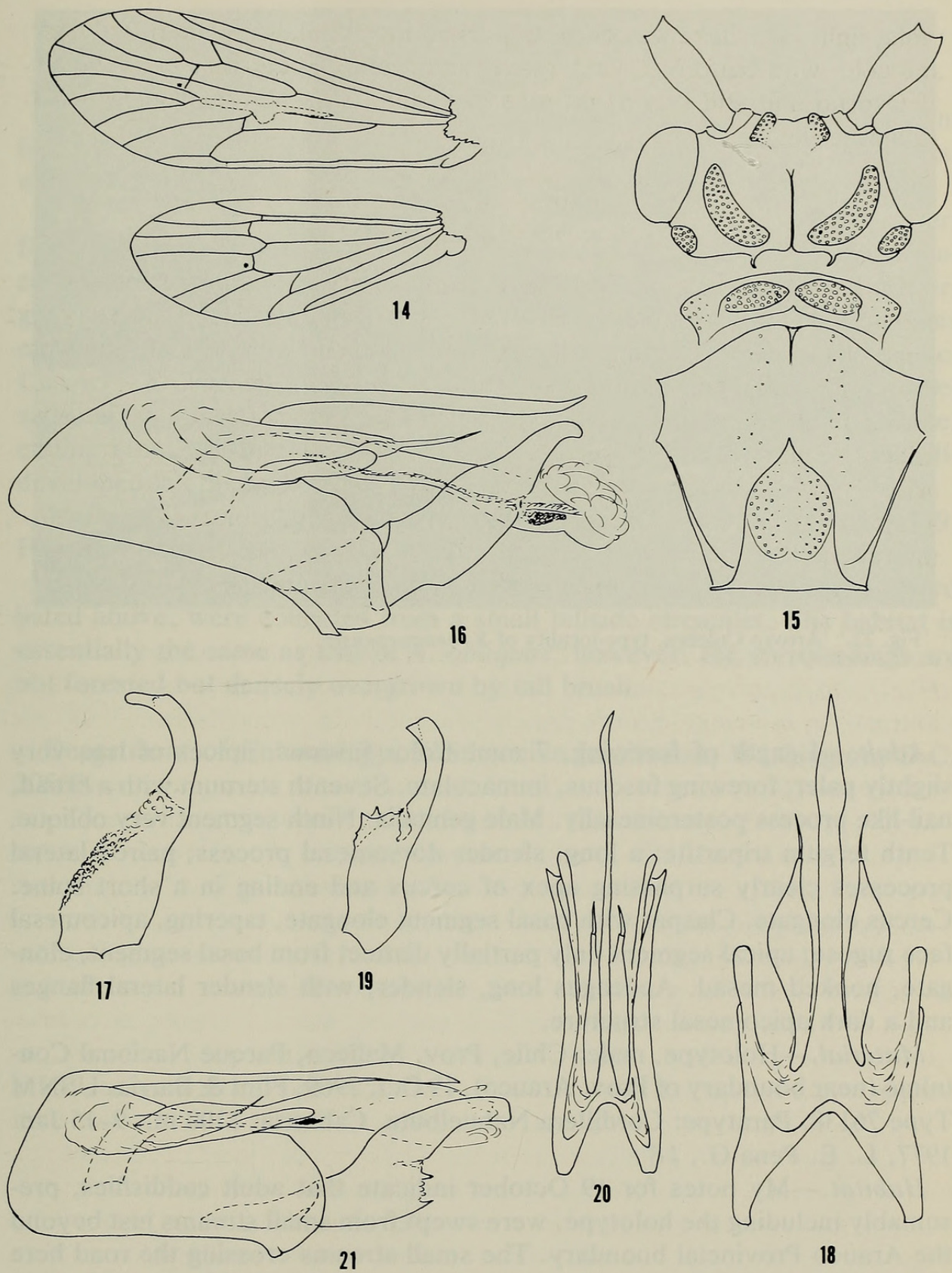
This genus appears to be related to the Chilean *Austrocentrus* Schmid and even more closely to the New Zealand *Alloecentrella* Wise. From *Austrocentrus* it may be distinguished by the closed discal cell, presence of R_2 , and the large open cell in the anal area in the forewing, and the loss of an apical branch of M or Cu in the hindwing. The male of *Alloecentrella* has a very similar venation in the forewing but appears to have lost the stem of M or possibly Cu, and has a very different venation in the hindwing.

The obvious very close relationship to the genus *Alloecentrella* from New Zealand, and the only slightly more distant relationship to the Australian *Alloecella* opens the question of proper family placement. The Australian-New Zealand component is presently placed in the family Helicophidae but was previously placed in the Beraeidae. It is certain that the Chilean component does not belong to the Sericostomatidae where it is presently placed, but in the taxon containing *Alloecentrella*. Therefore, *Alloecentrellodes*, *Austrocentrus*, and *Microthremma* are all transferred to the Helicophidae, marking the presence of the family in the New World for the first time. The relationship between the Beraeidae and Helicophidae may have to be reassessed at a later date when more data on the entire life cycle are known.

The females and immature stages of *Alloecentrellodes* are unknown.

Alloecentrellodes obliquus, new species
Figs. 14–18

This and the following, *A. elongatus* n. sp., are closely related. The ninth segment is more oblique, the lateral arms of the tenth tergum surpass the tip of the cercus, and the claspers lack the ventromesal angle in *A. obliquus*.



Figs. 14–21. *Alloecentrellodes obliquus*: 14, wings; 15, head and thorax, dorsal; 16, male genitalia, lateral; 17, clasper, ventral; 18, ninth and tenth terga, dorsal. *A. elongatus*: 19, clasper, ventral; 20, ninth and tenth terga, dorsal; 21, male genitalia, lateral.

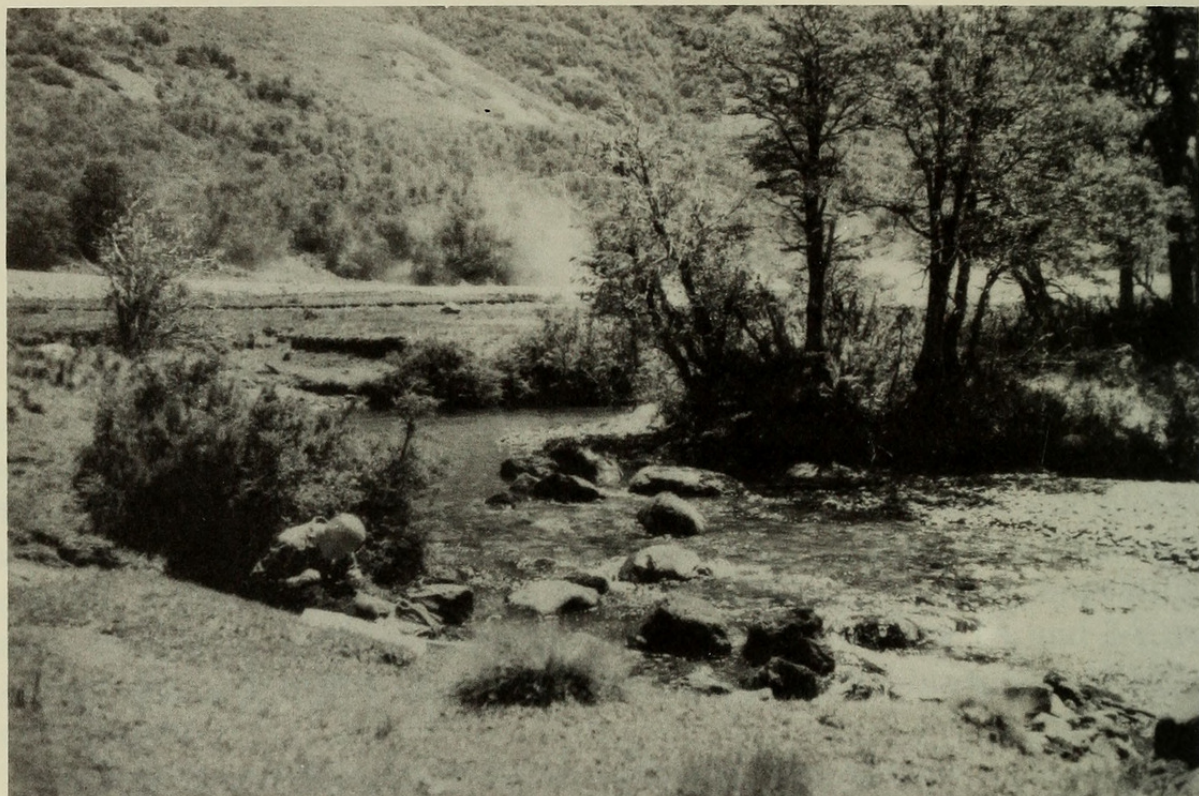


Fig. 22. Arroyo Culebra, type-locality of *S. neuquenensis*.

Adult.—Length of forewing, 7 mm. Color fuscous, apices of legs very slightly paler; forewing fuscous, immaculate. Seventh sternum with a broad, nail-like process posteromesally. Male genitalia: Ninth segment very oblique. Tenth tergum tripartite: a long, slender dorsomesal process; paired lateral processes clearly surpassing apex of cercus and ending in a short spine. Cercus elongate. Clasper with basal segment elongate, tapering, apicomesal face rugose; apical segment only partially distinct from basal segment, elongate, hooked mesad. Aedeagus long, slender, with slender lateral flanges and a dark apicomesal structure.

Material.—Holotype, male: Chile, Prov. Malleco, Parque Nacional Conculmo (near boundary of Prov. Arauco), 19 Oct. 1969, Flint & Barria. USNM Type 76138. Paratype: Cordillera Nahuelbuta, Cabreria, 1100 m., 9–15 Jan. 1977, L. E. Pena G., 1♂.

Habitat.—My notes for 19 October indicate that adult caddisflies, presumably including the holotype, were swept from small streams just beyond the Arauco Provincial boundary. The small streams crossing the road here flow steeply down the forested hillsides, and are barely a half-meter wide by a decimeter deep. The waters are clear and cold with a substrate of sand, gravel and rubble.

Alloecentrellodes elongatus, new species

Figs. 19–21

This species is closely related to the previous species. The ninth segment is horizontal, the lateral arms of the tenth tergum do not surpass the cercus, and the claspers have a distinct ventromesal angle in *A. elongatus*.

Adult.—Length of forewing, 5 mm. Color fuscous, legs slightly paler; forewing fuscous, immaculate. Seventh sternum with a broad, nail-like process posteromesally. Male genitalia: Ninth segment horizontal. Tenth tergum tripartite: a long, slender, dorsomesal process; paired lateral processes not attaining apex of cercus, and ending in a short spine. Cercus elongate. Clasper with basal segment elongate, produced into short lobes ventromesally; apical segment only partially distinct from basal segment, elongate, ending bluntly, slightly angled mesad. Aedeagus long, slender, with well-developed lateral flanges and a dark mesal structure.

Material.—Holotype, male: Chile, Prov. Nuble; Recinto, 14 Oct. 1969, Flint & Barria. USNM Type 76139. Paratype: Same data, 1♂.

Habitat.—My notes indicate that 2 adult caddisflies, of necessity the two listed above, were collected from a small hillside streamlet. The habitat is essentially the same as that of *A. obliquus*, however, the surroundings are not forested but densely overgrown by tall brush.

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Flint, Oliver S. 1979. "Studies Of Neotropical Caddis flies 23. New Genera From The Chilean Region." *Proceedings of the Biological Society of Washington* 92, 640–649.

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