

ARNOLDIA

(RHODESIA)

SERIES OF MISCELLANEOUS PUBLICATIONS

NATIONAL MUSEUMS OF SOUTHERN RHODESIA

No. 33

Volume 2

26th October, 1966

CHECK-LIST OF DRAGONFLIES (ODONATA) from MALAWI, WITH DESCRIPTION OF A NEW *TEINOBASIS* Kirby

by

ELLIOT PINHEY

(National Museum, Bulawayo)

A National Museum expedition to Malawi, the former Nyasaland, in April-May 1966, resulted in the capture of many insects of interest in different Orders. The journey could not have been undertaken without the invaluable support of Mr. J. A. Whellan, a former colleague of the Author. His son Rodney and an African staff Member of the Museum, Philip, also accompanied the party. The 1966 records of the Odonata here form the combined efforts of all four members of the expedition. The Author is also very grateful for the assistance accorded by D. H. Eccles, of the Malawi Fisheries Research as well as by the Marianist Order of the Nkata Bay Secondary School, particularly Father Imhof who helped in every possible way. The successful outcome of the journey was largely due to their kind assistance.

Setting off from Salisbury on the 23rd April by Land Rover the route taken may be briefly outlined. Proceeding north-east via Mtoko, through Moçambique, crossing the Zambezi River at Tete and on to Malawi, one of the most lucrative collecting sites proved to be Mpatamanga Gorge on the Shiré River. From there the expedition went on to Blantyre, Cholo and Zomba Mountains, reaching Monkey Bay at the south-western end of Lake Malawi. Here the party divided forces. Whellan and Rodney travelled by Land Rover over the escarpments, the Nyika Plateau and Livingstonia Mission, eventually descending to Nkata Bay; and the Museum party travelled by the cargo ship *Mpasa* via Chipoka to Nkata Bay. Here the Author, with Father Imhof's help, set up camp in Mkuwadzi Forest, to be joined later by the Whellans. On Friday, 13th May the entire party commenced the return journey over the Vipya Plateau, continuing southwards, revisiting Zomba Mountain and Mpatamanga Gorge and arriving back in Salisbury on the 18th of May.

Previous to this expedition, the Author had recorded some of the Malawi Odonata (Pinhey, 1961c) and these records are added to the present check-list. These earlier

specimens were mainly collected by W. J. Gray (the specimens now being in the National Museum of Nairobi), the late Rodney C. Wood, the late Colin Smee, David H. Eccles, and a few by the late Dr. G. Arnold.

One or two remarks may be made about certain localities. Limpasa dambo is a swamp winding among hills near Nkata Bay and was formerly part of Lake Malawi. The Nkata Bay Secondary School tops a hill overlooking this swamp. Further south is the evergreen Mkuwadzi Forest clothing the eastern slopes of a mountain of that name and a little further eastwards is Vizara Mountain with similar ecological conditions. Chipoka is the rail-head near the south-western end of Lake Malawi. Kasitu River is a very shallow river, with sandy bottom, to the south of Mzuzu in the Central Province.

There were two outstanding discoveries, both connected with the Malagassian subregion. *Hemicordulia asiatica* Selys (1878) has hitherto been known on the African mainland from the northern shores of Lake Victoria in Uganda. The genus *Teinobasis* Kirby (1890), of which a new species is recorded here, is another oriental link with species and subspecies on the islands of Seychelles and Madagascar.

Some groups were surprisingly sparse, such as *Lestes* Leach (1815) and *Ceriagrion* Selys (1876). Despite the forested mountains and low-lying streams only well known species of *Chlorocyphidae* and *Zygonyx* Selys (1866) were found, although the neighbouring territory of Zambia has several other species. An *Enallagma* is renamed in this paper.

Keys are included to species but not families. Family keys and venational structure are to be found in the earlier paper on Central African Odonata (Pinhey, 1961c).

LESTIDAE

Key to males of *Lestes* Leach

- 1 — Superior anal appendages turned downwards in distal half. Antehumeral stripes distinct and continuous *plagiatus* (Burmeister) 2
- Superior appendages curved inwards but not downwards. No distinct antehumeral stripes
- 2 — Mesothorax with rows of black spots. Superior appendage straight, only incurved just before apex; with inner sub-basal spine poorly developed *cineraceus* Martin
- Mesothorax without rows of black spots. Superior appendage gradually curving inwards well before apex; inner sub-basal spine prominent *pallidus* Rambur

Lestes cineraceus Martin (1910)
Mkuwadzi Forest, 10th May 1966, 1 ♀ only.
Previously: Nkata Bay (Eccles, December 1961).
Also known from Chirundu Bridge (Zambezi River) and a possible ♀ of this species in the British Museum (Natural History) from Ethiopia.

Lestes pallidus Rambur form *ictericus* Gerstaecker (1869)
Limpasa dambo, May 1966.
The species is widespread in Africa.

Lestes plagiatus (Burmeister, 1839)
Previously: Magombe (September 1963).
A widespread species.

PROTONEURIDAE

Key to males

- 1 — Vein 1A extending one cell beyond quadrilateral. Wings yellow *Chlorocnemis marshalli* Ris
- Vein 1A not extending beyond quadrilateral. Wings not yellow 2
- 2 — Superior anal appendage with two small ventral teeth *Elattonaura glauca* (Selys)
- Superior appendage with one large ventral tooth *Elattonaura frenulata* (Hagen)

Chlorocnemis marshalli Ris (1921)
Cholo Mountain, Zomba Mountain, Mkuwadzi Forest, May 1966.
Previously: Zomba (Colin Smee).
Known also from Rhodesia.

Elattonaura frenulata (Hagen, 1860)
Mpatamanga Gorge, Mkuwadzi Forest, Vizara Mountain (Nkata Bay), Limpasa dambo, May 1966.
Previously: Cholo (Wood, 20th February 1960).
South, Central and East Africa.

Elattonaura glauca (Selys, 1860)
Zomba Mountain, Monkey Bay, April 1966.
Widespread in Africa.

PLATYCNEMIDIDAE

Metacnemis singularis (Karsch, 1891)
Mpatamanga Gorge, Monkey Bay, April, May 1966.
Previously: Nkata Bay (Eccles, April 1961, May 1962).
Widespread in Africa.

COENAGRIIDAE

Key, mainly to males

- 1 — Anal vein leaves margin well distal to Ac. Abdomen long and very slender *Teinobasis malawiensis* spec. nov. 2
- Anal vein leaves margin at or before Ac
- 2 — Arculus far distal to second Ax. Small, slender species *Agriocnemis* Selys 3
- Arculus at or almost at second Ax. Usually larger, more robust 4
- 3 — Larger species. Segment 10 of abdomen projecting posteriorly in centre. Superior appendage with outer branch projected obliquely downwards *A. gratiosa* Karsch
- Smallest species. Segment 10 not projecting medially. Superior appendage globular, extending slightly vertically downwards *A. exilis* Selys
- 4 — Anal vein leaves margin distinctly before Ac 5
- Anal vein leaves margin at or almost at Ac 9
- 5 — Pterostigma in forewing bicolorous. Postclypeus metallic *Ischnura senegalensis* (Rambur)

— Pterostigma unicolorous. Postclypeus non-metallic.	<i>Enallagma</i> Charpentier	6
6 — Superior anal appendages prominent and extending horizontally		7
— Superior appendages not prominent or extending sharply downwards		8
7 — Pterostigma dark brown. Thorax black with blue stripes	<i>E. glaucum</i> (Burmeister)	
— Pterostigma yellowish. Thorax pale brown with dark mid-dorsal line.	<i>E. subtile</i> Ris	
8 — Thorax black with blue stripes. Superior appendage very short	<i>E. nigridorsum</i> Selys	
— Thorax pale brown. Superior appendage sloping distinctly downwards	<i>E. sinuatum fugax</i> Pinhey	
9 — Frons with angled crest. Abdomen red or reddish without black marking	<i>Ceriagrion</i> Selys	10
— Frons rounded, without crest. Abdomen with continuous black markings on at least some segments or very slender but with black spots before the ends of most of the segments		11
10 — Tenth segment of abdomen with dorso-lateral spines on posterior edge. Thorax of ♂ orange or red. Arculus at second Ax	<i>C. glabrum</i> (Burmeister)	
— Tenth segment without spines. Thorax usually green. Arculus beyond second Ax	<i>C. bidentatum</i> Fraser	
11 — Abdomen very slender. Pterostigma a small rhombus. Female normally with ventral spine on 8th segment	<i>Aciagrion</i> Selys	12
— Abdomen not abnormally slender. Pterostigma a parallelogram. Female without ventral spine on 8th segment	<i>Pseudagrion</i> Selys	13
12 — Superior anal appendage longer than 10th segment and much longer than inferior appendage. Thorax black with blue stripes	<i>A. africanum</i> Martin	
— Superior appendage much shorter than 10th segment and inferior appendage. Thorax with only traces of black	<i>A. attenuatum</i> Fraser	
13 — Abdominal segment 10 of ♂ with pronounced distal spines		14
— Segment 10 without such spines		20
14 — Vertex all black without postocular spots. Thorax of mature ♂ black above without pale antehumeral stripes. Tibiae reddish	<i>Pseudagrion whellani</i> Pinhey	
— Vertex not or only partly black and with distinct postocular spots. Thorax dorsally mainly red or blue or at least with antehumeral stripes of such colours		15
15 — Face blue or greenish		16
— Face red or deep orange		17
16 — Superior anal appendage as long as segment 10 and with prominent inner ventral flange	<i>Ps. nubicum</i> Selys	
— Superior appendage distinctly shorter than segment 10, notched but without inner flange	<i>Ps. glaucescens</i> Selys	
17 — Inferior anal appendage hatchet-shaped		18
— Inferior anal appendage not hatchet-shaped		19
18 — Superior appendage not longer than inferior. Thorax not pruinose dorsally	<i>Ps. massaicum</i> Sjöstedt	

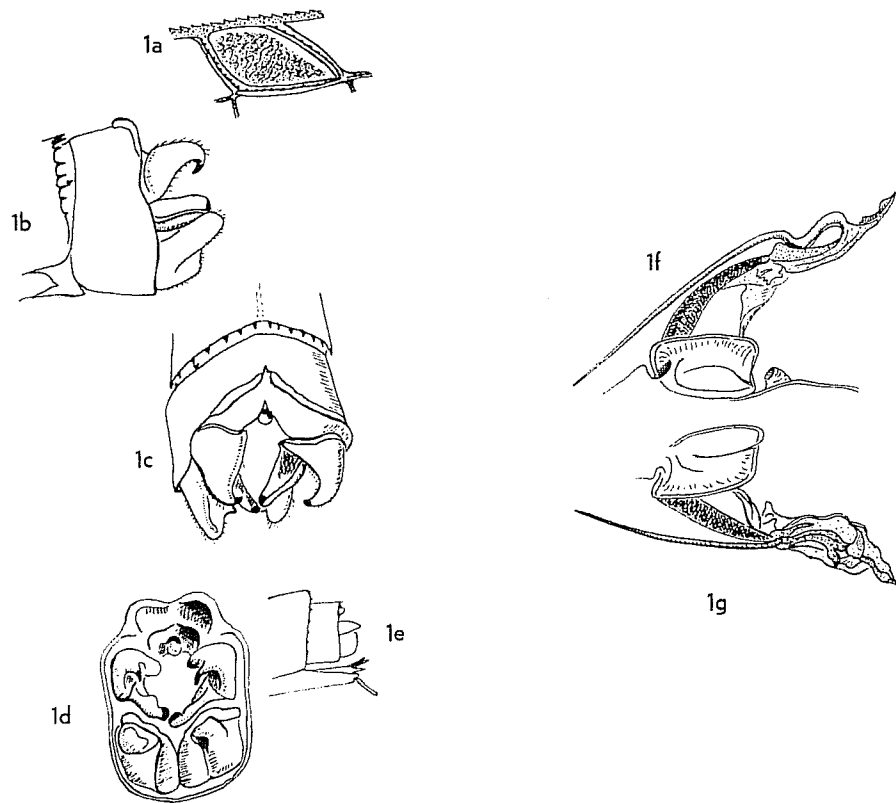
— Superior appendage longer than inferior. Thorax of mature ♂ pruinose, purplish	<i>Ps. pseudomassaicum</i> Pinhey	
19 — Inferior appendage in side view strongly upturned	<i>Ps. acaciae</i> Förster	
— Inferior appendage not upturned	<i>Ps. sjöstedti</i> Förster	
20 — Mature ♂ not pruinose on dorsum of head and thorax. Labrum bright orange		21
— Mature ♂ more or less pruinose dorsally. Labrum not bright orange.		22
21 — Very large, very robust species, with vertex and frons all dark	<i>Ps. gigas</i> Ris	
— Large or smallish but slender. A broad bright orange band across frontal area	<i>Ps. hageni tropicanum</i> Pinhey	
22 — Superior appendage with very distinctive horizontal lower branch extending well beyond upper branch. Mature ♂ with broad pruinose bluish white antehumeral stripes	<i>Ps. kersteni</i> (Gerstaecker)	
— Superior with only a weakly developed lower branch. Antehumeral stripes if visible are slender		23
23 — Superior appendage with lower branch very oblique and slender, sloping across the robust main branch	<i>Ps. spernatum</i> Karsch	
— Superior appendage with lower branch horizontal and of almost equal thickness compared to upper branch		24
24 — Segments 8-9 of abdomen either pruinose blue or else black dorsally. Superior appendage slender	<i>Ps. salisburyense</i> Ris	
— Segments 8-9 not pruinose but blue dorsally, black laterally. Superior appendage stout	<i>Ps. chongwe</i> Pinhey	

TEINOBASIS Kirby (1877)

Hitherto this genus has been known from the Malagassian subregion but has not been recorded from the African mainland. A few examples were collected by the author amongst vegetation on the banks of a rocky stream in Mkuwadzi Forest, Nkata Bay. They are of very slender build and appear to resemble *Aciagrion* Selys in the field, but the latter genus is usually to be found in swamps or small stagnant pools with partially submerged reeds or grasses.

TEINOBASIS MALAWIENSIS spec. nov.

Holotype ♂
 Face and head above ochreous. Base of labrum with black central spot and black smear at lateral angle. Postclypeus with blackish medial stripe. Vertex and occiput with bronze-green sheen, with ochreous line posteriorly, continuous across back of occiput.
 Pro- and synthorax ochreous with greenish tinge (particularly when alive). Mesepisterna with bronze median stripe covering about a third of each mesepisternum. A black spot at dorsal end of humeral suture and another at dorsal end of second lateral suture. Legs ochreous with black spines and with short brown smear on posterior surfaces of femora.
 Abdomen orange on segments 1, 10 and the anal appendages. Segments 2, base of 3 and all 8 and 9 red; remainder dark brown dorsally and laterally, with cream-coloured latero-basal dot on segments 4-7. Anal appendages (fig. 1) very similar to



1. *Teinobasis malawiensis* spec. nov.
- Pterostigma of ♂ holotype, left forewing, upper surface.
 - Superior anal appendages of ♂ holotype, from left side, from dorsal view (slightly obliquely), from posterior view.
 - Terminal segments of ♀ allotype.
 - Peneal complex in situ, from right, from ventral aspect (obliquely from left).

T. alluaudi berlandi Schmidt, slightly shorter than segment 10. Superior appendage conical ending in an incurved black hook; and with an inner basal branch, with black apical gripping surface, this inferior branch directed inwards and slightly downwards to meet the inferior branch of the opposing superior appendage (fig. 1c-d, posterior view). Inferior appendage broad at base, tapering to a blunt apex.

Pterostigma (fig. 1a) ochreous, venation dark brown. Forewing with 14 Px. R_3 rises at 7th Px. IR_3 and $R_4 + 5$ almost conjointly below nodus. Quadrilateral with acute distal angle. Anal vein leaves margin at level of arculus, well distal to Ac.

Abdomen 39 mm, hindwing 22.5 mm.

Allotype ♀

Similar to ♂, the abdomen only slightly thicker. It differs as follows:—
Abdominal segment 1 ochreous with blackish distal annulus raised medially on a

slight tumour. Segment 2 mainly blackish dorsally but this blackish more or less severed at three-quarters. Segments 3-6 blackish with whitish latero-basal dot; 7 blackish, becoming reddish distally, also with pale basal dot. Segments 8-10 and appendages red.

Pterostigma as in ♂ but on left forewing there is a slight deformity to the right (basad) of the pterostigma. Forewing with 12 Px.

Abdomen 37 mm, hindwing 26 mm.

In *alluaudi berlandi* Schmidt from Madagascar the ♂ differs as follows:—

Labrum with continuous black basal line; postclypeus with black band along anterior edge and a black central dot. Abdomen ochreous to red with only traces of blackish dorsally on distal half of segment 3, and traces of dorsal darkening on distal ends of segments 4-7. Pterostigma paler, more rhomboidal.

In the shape of the pterostigma, with baso-posterior angle acute this new species is similar to *alluaudi alluaudi* (Martin, 1896) from Seychelles. In the latter on the vertex there is a broad orange occipital stripe instead of a narrow one as in the new species, and the postclypeus is entirely black.

Mkuwadzi Forest, Nkata Bay, at a rocky stream, on 9th, 10th, 11th, 12th May, 1966. Holotype ♂, Allotype ♀, and paratype ♀ in the National Museum, Bulawayo; and one paratype ♀ will be presented to the British Museum (Natural History).

Ceriagrion ? *bidentatum* Fraser (1941)

One teneral ♀, Mkuwadzi Forest, 9th May 1966 is probably this species. The thoracic structures are in agreement.

Local in forests of Central and Tropical Africa.

Ceriagrion glabrum (Burmeister, 1839)

Monkey Bay, Chipoka, Mkuwadzi Forest, Limpasa dambo, Nkamakama River (Central Province), May 1966.

Previously: Port Herald (Gray), Monkey Bay (Eccles, December 1962), Kota Kota (Eccles, May 1960), Nkata Bay (Eccles, August 1960).

Found in the entire Ethiopian region including the Malagassian islands and in parts of Arabia, etc.

Pseudagrion acaciae (Förster 1906)

Mpatamanga Gorge, May 1966.

Widespread in Africa.

Pseudagrion ? *chongwe* Pinhey (1961c)

Kasitu River (Central Province), 14th May 1966, a solitary ♀ seems to belong to this species.

Known from Zambia.

Pseudagrion gigas Ris (1936)

Previously: Cholo (Wood)

Moderately widespread in Africa.

Pseudagrion glaucescens Selys (1876)

Limpasa dambo, May 1966, melanic form.

Subtropical to equatorial Africa.

Pseudagrion hageni tropicanum Pinhey (1966)

Mkuwadzi Forest, Vizara Mountain, May 1966.

Previously: Magombe (September 1963), Nkata Bay (Eccles, May 1961).

Widespread in Africa.

Pseudagrion kersteni (Gerstaecker, 1869)
Mpatamanga Gorge, Cholo, Zomba Mountain, Mkuwadzi Forest, Limpasa dambo, Kasitu River, Nkamakama River, May 1966.
Previously: Cholo (Wood, February 1960), Magombe (September 1963) Mkuwadzi Forest (Eccles, June 1962), Vizara Mountain (Nkata Bay) (Eccles, August 1960), Mzimba (Gray), Fort Hill (Gray).
Abundant in most parts of Africa.

Pseudagrion massaicum Sjöstedt (1909)
Mpatamanga Gorge, Monkey Bay, May 1966.
Previously: Kota Kota (Gray).
Most of the African continent.

Pseudagrion nubicum Selys (1876)
Limpasa dambo, May 1966.
Subtropical and tropical Africa.

Pseudagrion pseudomassaicum Pinhey (1951)
Mpatamanga Gorge, Monkey Bay, Limpasa dambo, Kasitu River, May 1966.
Previously: Monkey Bay (Eccles, July 1962), Nkata Bay (Eccles, April 1961.)
Most parts of Ethiopian Africa.

Pseudagrion salisburyense Ris (1921)
Previously: Mzimba (Gray).
Widespread in Africa.

Pseudagrion sjöstedti sjöstedti Förster (1906)
Limpasa dambo, May 1966.
Subtropical to tropical Africa.

Pseudagrion spernatum spernatum Selys (1881)
Cholo, Zomba Mountain, May 1966.
Previously (subspecies *gerstaeckeri* Karsch, 1899): Mzimba (Gray).
Widespread in Africa.

Pseudagrion whellani Pinhey (1956)
Mpatamanga Gorge, Limpasa dambo, May 1966.
Previously: Magombe (September 1963).
Subtropical and tropical Africa.

Aciagrion africanum Martin (1908)
Limpasa dambo, 12th May 1966.
Central Africa.

Aciagrion attenuatum Fraser (1928)
Monkey Bay, May 1966 (Eccles).
Previously: Zomba Mountain (Colin Smee), Nkata Bay (Eccles, 14th December 1960).
Described from Malawi and known from Rhodesia, Mozambique and Tanzania.

Enallagma glaucum (Burmeister, 1839)
Chelinda River (Nyika Plateau, 7000 ft.), May 1966.
Most parts of continental Africa.

Enallagma nigridorsum Selys (1876)
Previously: Zomba Mountain reservoir (Whellan, 25th November 1964).
Subtropical and tropical Africa.

Enallagma sinuatum fugax Pinhey (1962b)
Limpasa dambo, 11th May 1966, one teneral ♂. This specimen had, in life, on its plain, pale brown synthorax, a most peculiar pale blue antehumeral stripe, very slender and still just traceable in the dried condition. In life the eye was whitish, with three brown rings on the dorsal half. Postocular spots cobalt, narrow: these again being still discernible after preservation. They are linked across the back of the occiput. Segments 8-10 of the abdomen were whitish and remain faintly so some months later. This form or subspecies *fugax* was described from Zambia.

Enallagma subtile Ris (1921)
Previously: Zomba Mountain (Colin Smee; G. Arnold, November 1943).
Widespread in continental Africa.

Enallagma spec. inc.
One very teneral ♀ Kasungu River (Central Province), 14th May 1966.

[*Enallagma risi* Pinhey (1962), nom. nov. pro *minutum* Ris (1931) (praeocc., Selys 1857): praeocc. *risi* Schmidt (1961, Ergebnisse der Deutschen Afghanistan—Expedition 1956 der Landessammlungen für Naturkunde Karlsruhe, etc., *Beitr. Naturk. Forsch. S.W. Dtschl.*, Karlsruhe **19**: 399—435.

This species must therefore be re-named again:—
ENALLAGMA ANGOLICUM nom. nov. pro *risi* Pinhey (1962), nec Schmidt (1961.)].

Ischnura senegalensis (Rambur, 1842)
This species must surely occur in Malawi although the Author has not yet seen a specimen from there. Known throughout Africa and many parts of Asia.

Agriocnemis exilis Selys (1869)
Mpatamanga Gorge, Monkey Bay, Limpasa dambo, May 1966.
Previously: Nkata Bay (Eccles, June 1961).
Widespread in Africa.

Agriocnemis gratiosa Gerstaecker (1891)
Monkey Bay, Chipoka (and on cargo ship M.V. *Mpasa*, at Chipoka), May 1966.
Previously: Nkata Bay (Eccles, June 1961).
Central Africa.

AGRIIDAE

Phaon iridipennis (Burmeister, 1839)
Mpatamanga Gorge, Zomba Mountain, Mkuwadzi Forest, Limpasa dambo, May 1966.
Previously: Nkata Bay (Eccles, 23rd July 1960), Njakwa Gorge (Gray), Mzimba (Gray).
Subtropical and tropical Africa.

CHLOROCYPHIDAE

Key to males.

- 1 — Abdomen dorsally sky blue. Tibiae inflated, coloured
 *Platycephala caligata* (Selys)
 — Abdomen crimson red. Tibiae normal, not coloured
 *Chlorocypha consueta* (Karsch)

Platycephala caligata (Selys, 1853)

Mpatamanga Gorge, Zomba Mountain, Limpasa dambo, Kasitu River, May 1966.
 Previously: Cholo (Wood, 20th February 1960), Cape Maclear (Wood, 4th August
 1961), Njakwa Gorge (Gray), Nkata Bay (Eccles, January 1961), Mzimba (Gray).
 Widespread on the African continent.

Chlorocypha consueta (Karsch, 1899)

Mkuwadzi Forest, May 1966, on most streams.
 Previously: Kandoli (Nkata Bay) (Eccles, 16th December 1961).
 Local in Central Africa.

GOMPHIDAE

Key

- 1 — Triangles *crossed* in all wings. Very large, robust. Prominent foliations
 on abdominal segment 8 *Ictinogomphus ferox* (Rambur) 2
 — Triangles not crossed (free)
 2 — Very small species with very slender abdomen, segment 10 very much
 elongated *Lestinogomphus angustus* Martin 3
 — Not markedly small or if so the abdomen is not entirely slender and
 segment 10 not elongated
 3 — Small species, the superior anal appendage deeply *bifid*. Forewing with
 3-4 crossveins between RS and MA before the bifurcation of RS
 *Microgomphus nyassicus* (Grunberg) 4
 — Superior appendage not strongly bifid. Forewing with 1-2 crossveins
 between RS and MA before the forking of RS
 4 — Very large species (like *Ictinogomphus ferox*) with prominent broad
 foliations on segment 8 *Phyllogomphus latifascia* Pinhey 5
 — Moderate or small species with or without small or narrow foliations
 on segment 8
 5 — Hindfemur long, reaching middle of abdominal segment 2
 *Notogomphus* Hagen 6
 — Hindfemur short, not reaching beyond base of segment 2
 6 — Large species. Costal edge black. Labrum black and rest of face in front
 with broad black marking. Pterostigma dark brown in mature examples
 *Notogomphus dendrohyrax* (Förster) 7
 — Small species. Costal edge yellowish. Labrum yellow. Rest of face in
 front yellow, at most with narrow black line. Pterostigma yellow
 *Notogomphus zernyi* (St. Quentin)
 7 — Pterostigma elongated, at least 4 mm. Superior appendage of ♂ scarcely
 longer than segment 10 and not longer than inferior appendage
 *Crenigomphus hartmanni* (Förster)

- Pterostigma 3.5 mm or less. Superior appendage longer than segment 10
 and much longer than inferior appendage . . . *Paragomphus* Cowley 8
 8 — Face in front with distinct black bands. Superior appendages of ♂ thick,
 divergent, not tapering *Paragomphus cognatus* (Rambur) 9
 — Face in front only green or with pale brown stripes
 9 — Thorax in front with short green antehumeral stripes on a blackish
 ground colour. Superior appendages slender, convergent
 *Paragomphus elpidius* (Ris) 10
 — Thorax in front green with only indistinct brown streaks
 10 — Superior appendages very thick, divergent
 *Paragomphus nyassicus* Kimmins
 — Superior appendages tapering, the slender apices convergent
 *Paragomphus genei* (Selys)

Ictinogomphus ferox (Rambur, 1842)

Monkey Bay, May 1966.
 Common in Central and tropical Africa. The only other gomphid seen from Malawi
 as large as this is *Phyllogomphus latifascia* Pinhey, from the same locality.

Lestinogomphus angustus Martin (1912)

Monkey Bay, 28th April 1966.
 Previously: Monkey Bay (Eccles, 29th September 1962), Nkata Bay (Eccles, 15th
 October 1962).
 Central to equatorial Africa.

Microgomphus nyassicus (Grünberg, 1902)

Syn. nov. *Microgomphus witchwoodensis* Pinhey (1961)
 Previously: Type ♀ *nyassicus*, Langenburg (Malawi-Tanzania border). Also Rhodesia
 (*witchwoodensis*).
 Rare and very little known.

Phyllogomphus latifascia Pinhey (1961a)

Previously: Monkey Bay (Eccles, 4th January 1961 and 30th December 1962).
 Described from Angola.

Notogomphus dendrohyrax (Förster, 1906)

Mkuwadzi Forest, May 1966.
 Known from N.E. Tanzania and Rhodesia.

Notogomphus zernyi (St. Quentin, 1942)

Outskirts of Chowa Forest (Nyika Plateau, Zambia-Malawi border), 7th May 1966
 (Whellan). This single mature ♂ differs slightly from the series in the National
 Museum, Bulawayo, collected from the eastern mountain range of Rhodesia: in
 this ♂ the black band on front of frons is less developed than in mature Rhodesian
 examples, but more so than in teneral ones. *Humeral* black is less developed than
 mature or even teneral specimens and there are no black traces on first lateral suture.
 The black exterior streak on forefemur is again less than in immature specimens.
 In other respects, size, abdominal markings and wing features it agrees with
 Rhodesian examples.

By locality this paler Nyika form may possibly be closer in markings to the topo-
 typical specimens but this has not been confirmed since the holotype was teneral
 and is apparently not in good condition.

Previously: type series from Mount Lupembe and Ugano on Malawi-Tanzania border.

Crenigomphus hartmanni (Förster, 1898)
Mpatamanga Gorge, May 1966.
Previously: Mzimba (Gray).
South and Central Africa.

Paragomphus cognatus (Rambur, 1842)
Previously: Fort William (Gray).
Most of the Ethiopian region.

Paragomphus elpidius (Ris, 1921)
Kasitu River, May 1966.
(Previously: the record quoted as "Nyasaland" (Pinhey, 1951) proved on later examination to be Kimmins' *nyassicus*).
South to Central Africa.

Paragomphus genei (Selys, 1841)
(= *hagenii* (Selys, 1871))
Chipoka, Kasitu River, May 1966.
Throughout Africa to Southern Europe.

Paragomphus nyassicus Kimmins (1955)
Previously: Nkata Bay (Eccles, 7th September 1960), Salima Bay (G. Arnold, 1st, 3rd and 5th November 1943).
A little known species also recorded from Victoria Falls.

AESHNIDAE

Key: this key will not be the usual structural one dependent on detailed venational features, but will rely partly on living colours and habits.

- 1 — Sun-loving, diurnal species with bright colours on abdomen 2
 - Crepuscular or shade-loving with abdomen generally dull or with only small brightly coloured dots 4
- 2 — Abdomen orange-spotted, with a large pale blue dorsal spot near base. Anal vein on hindwing forms a pronounced loop
 - *Hemianax ephippiger* (Burmeister)
 - Abdomen mainly reddish or bluish, without a large prominent blue patch. Anal vein kinked but not forming a wide loop 3
- 3 — Abdomen red or orange *Anax speratus* Hagen
- Abdomen blue or green *Anax imperator* Leach
- 4 — Thorax with green lateral stripes on a deep brown ground colour 5
 - Thorax plain brown or green 6
- 5 — Frons with an ocellated black dot: a dot more or less surrounded by a black ring. Front of thorax often with a short green stripe. ♂ with protruding genitalia on ventral surface of second segment
 - *Aeshna rileyi* Calvert
 - Frons with a black T-shaped mark having a broad stem. Front of thorax without green stripe. ♂ accessory genitalia not protruding
 - *Anaciaeschna triangulifera* McLachlan

- 6 — Thorax green and very large, robust. Eyes normal for this family. Abdomen black with blue spots and a large blue or green area near base *Anax chloromelas* Ris
- Thorax brown or green, small for the family but eyes unusually large. Abdomen brown with only small coloured dots, if any 7
- 7 — Median space at bases of all wings (before the arculus) with cross-veins *Heliaeschna trinervulata* Fraser
- A clear basal median space on all wings *Gynacantha* Selys 8
- 8 — Wings short and broad, distinctly shorter than abdomen. Legs reddish brown to black with yellowish streaks. Superior anal appendage of ♂ blade-shaped with short stem *G. manderica* Grünberg
- Wings not short and broad, not distinctly shorter than abdomen. Legs uniformly coloured 9
- 9 — Abdomen slender. Wings amber at bases. Anal triangle near base of hindwing with 3 cells. Superior appendage of ♂ blade-shaped *G. zuluensis* Balinsky
- Abdomen robust. Wings not amber at bases. Anal triangle of 4 cells. Superior appendage of ♂ sinuous on inner edge 10
- 10 — Large species, abdomen and hindwing over 50 mm long. Superior anal appendage with ventral swelling near base *Gynacantha villosa* Grünberg
- Smaller species, dimensions not over 50 mm. Superior appendage without sub-basal swelling *Gynacantha vesiculata* Karsch

Aeshna rileyi Calvert (1892)
Previously: Zomba Mountain (Whellan, November 1964).
Most of the African continent.

Anaciaeschna triangulifera McLachlan (1895)
Monkey Bay, 28th May 1966, at dusk.
Widespread in Africa and Madagascar.

Hemianax ephippiger (Burmeister, 1839)
The Author has not yet seen Malawi examples but this common migrant is found throughout Africa, as well as parts of Europe and Asia.

Anax chloromelas Ris (1911)
Definitely observed in flight (Author and Whellan) on the hill at Nkata Bay Secondary School, hawking at dusk, 9th and 10th May 1966.
Previously: Vizara Mountain (Nkata Bay) (D. Gifford, in correspondence with Author).
A scarce species in Central Africa.

Anax imperator Leach (1815)
Chipoka, Limpasa dambo, May 1966.
Previously: Monkey Bay (Eccles, 27th August 1962).
Common throughout Africa; Europe, Western Asia.

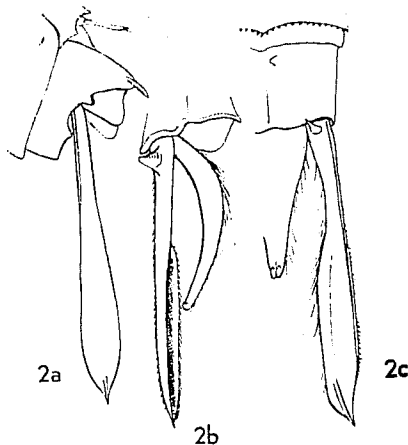
Anax speratus Hagen (1867)
Mpatamanga Gorge, Mkuwadzi Forest, Limpasa dambo, Kasitu River, May 1966.
Previously: Cholo (Wood, February 1960).
Widespread in Africa.

Gynacantha manderica (Karsch MS) Grünberg (1902)
 Previously: Nkata Bay (Eccles, December 1961, 5th April 1962).
 Central and tropical Africa.

Gynacantha vesiculata Karsch (1891)
 Mkuwadzi Forest, May 1966 (small example), at dusk.
 Tropical Africa.

Gynacantha villosa Grünberg (1902)
 Mkuwadzi Forest and Nkata Bay Mission School, May 1966, common at dusk.
 Previously: Nkata Bay (data not available), and described originally from Langenburg
 (near Malawi-Tanzania border).
 Central to equatorial Africa.

Gynacantha zuluensis Balinsky (1961)
 Mkuwadzi Forest, May 1966, a few examples at dusk.
 A little known species described from Natal.



2. *Heliaeschna trinervulata* Fraser
 Terminal appendages.
 a. ♀, from right side.
 b. ♂, from right side.
 c. ♂, from above.

Heliaeschna trinervulata Fraser (1955)
 Mkuwadzi Forest and Nkata Bay Mission School, May 1966, common at dusk,
 flying at 10 to 20 feet.
 Previously: Bungulo Forest (Nkata Bay) (Gifford, 4th May 1962, 1st June 1962) in
 Royal Scottish Museum, Edinburgh.
 Also known sparingly from Zambia, Congo (Katanga) and perhaps Uganda.
 Fraser's original description omits illustrations of the anal appendages. These are
 shown here (fig. 2).

CORDULIDAE

Key

- 1 — Very small species (hindwing well under 30 mm), the thorax metallic green. Anal loop of hindwing very elongated *Hemicordulia asiatica* Selys
- Larger (hindwing 35 mm or more), the thorax reddish brown, with or without yellow stripes but without marked green colour. Anal loop of hindwing short and broad 2
- 2 — Thorax *without* yellow stripes. Very large species. ♀ with deep brown streaks at bases of wings and sharply defined orange apex to forewing (not hindwing) *Macromia nyanzana* Grünberg
- Thorax with three yellow stripes on each side. Smaller species. ♀ without basal streaks and either without orange on wings or with diffuse orange or amber on all wings 3
- 3 — Larger species with central segments of abdomen plain black; face all deep reddish brown; pterostigma dark brown; superior appendage of ♂ black *Macromia monoceros* Förster
- Smaller species with most segments of abdomen spotted with yellow; face largely yellow; pterostigma reddish; superior appendage yellow *Macromia picta* Selys

Hemicordulia asiatica Selys (1878)
 Mkuwadzi Forest, 6th May 1966, 1 ♂ captured flying down road through forest at about 11 a.m.
 Apart from Madagascar this oriental species has only been taken close to the northern shores of Lake Victoria in Uganda (Pinhey, 1961b: 105).

Macromia monoceros Förster (1906)
 Zomba Mountain, Mkuwadzi Forest, May 1966. Also probably this species seen in flight at Mpatamanga Gorge at dusk.
 South to East Africa.

Macromia nyanzana Grünberg (1911)
 Mkuwadzi Forest, Nkata Bay Mission School, Limpasa dambo, May 1966.
 Widespread in subtropical and tropical Africa.

Macromia picta Selys (1871)
 Previously: Njakwa Gorge (Gray).
 Widespread in Africa.

LIBELLULIDAE

Key: this is a somewhat simplified key to this large family. In the larger genera, particularly *Orithetrum*, genitalial examination is necessary.

- 1 — Discoidal cell on forewing a small quadrilateral. Wings all narrow, the outer half deep brown in ♂ *Tetrathemis polleni* (Selys) 2
- Discoidal cell on forewing always triangular. Hindwing usually decidedly broader than forewing near base 3
- 2 — Arculus in forewing at or distal to second Ax 3
- Arculus in forewing distinctly nearer base 17

3	— Last Ax in forewing complete	4
	— Last Ax in forewing incomplete. Forewing often with short black streak below costa	16
4	— Cubital space of hindwing with 2 or 3 crossveins	5
	— Cubital space of hindwing with 1 crossvein	6
5	— Body black with metallic sheen; abdomen slender, slightly inflated before apex	
	<i>Atoconeura biordinata</i> Karsch	
	— Body red, very robust, the abdomen very thick. Wings with chocolate apices	
	<i>Hadrothemis scabrifrons</i> Ris	
6	— Small species, the triangle on forewing rather broad, followed by two rows in the discoidal field	7
	<i>Aethiothemis</i> Martin	
	— Moderate to largish species, the triangle on forewing narrow, the discoidal field usually of three rows	8
7	— Abdomen broad. Thorax of mature ♂ blue. No black stripe on front of thorax, only at humeral suture	
	<i>Aethiothemis mediofasciata</i> Ris	
	— Abdomen slender. Thorax not blue. Front of thorax with black stripes as well as the humeral suture	
	<i>Aethiothemis diamangae</i> Longfield	
8	— Vertex rounded. Abdomen broad in both sexes, not constricted in basal half in ♂. Thorax brown with yellow median stripe on front (if not heavily coated with pale blue). Wings of ♀ with brown tips	
	<i>Nesciothemis farinosa</i> (Förster)	
	— Vertex grooved. Abdomen slender, at least in ♂, and constricted after the basal swelling. Thorax without median yellow stripe. Wings not brown-tipped	9
	<i>Orthetrum</i> Newman	
9	— Subcostal cross veins black	10
	— Subcostal cross veins yellow	11
10	— Radial supplement on forewing (Rspl) of 1 row	
	<i>Orthetrum falsum</i> Longfield	
	— Rspl on forewing of two rows	
	<i>Orthetrum stemmale kalai</i> Longfield	
11	— Rspl on forewing of 2 rows	12
	— Rspl on forewing of 1 row	13
12	— Thorax not heavily black striped	
	<i>Orthetrum brachiale</i> (Beauvois)	
	— Thorax showing heavy black stripes, even if pruinosed blue. Frons with black stripe on anterior surface	
	<i>Orthetrum icteromelas</i> Ris	
13	— Thorax (if not covered with blue) showing only faint dark lines, not thick	14
	— Thorax with thick black stripes	15
14	— Small species with very little marking on thorax and no white line	
	<i>Orthetrum abbotti</i> Calvert	
	— Not small; with traces of grey markings on thorax and usually a white lateral stripe	
	<i>Orthetrum chrysostigma</i> (Burmeister)	
15	— Abdomen usually less than 29 mm long. Pterostigma 3 mm long or longer	
	<i>Orthetrum hintzii</i> Schmidt	
	— Abdomen 29 mm or longer. Pterostigma usually less than 3 mm	
	<i>Orthetrum guineense</i> Ris	
16	— Cubital space of hindwing with 3-4 cross veins. Pterostigma short, plain black	
	<i>Thermochoria equivocata</i> Kirby	
	— Cubital space with 1 cross vein. Pterostigma long, yellow and brown	
	<i>Hemistigma albipuncta</i> (Rambur)	
17	— Costa indented between nodus and base	18
	<i>Palpopleura</i> Rambur	
	— Costa even, as far as nodus	20

18	— Wings with only short black streaks below costa	
	<i>Palpopleura deceptor</i> (Calvert)	
	— Wings with broad black markings over most of the wing or at least across the wing bases	19
19	— Thorax yellow without paler stripes. Dark wing markings either at base or in isolated patches on the wings	
	<i>Palpopleura jucunda</i> Rambur	
	— Thorax brown or blackish with yellow lateral stripes. Brown or black wing markings not confined to base but in a complete band or more or less linked patches	
	<i>Palpopleura lucia</i> (Drury)	
	and (less heavily marked)	
	<i>f. portia</i> (Drury)	
20	— Last Ax in forewing usually complete	21
	— Last Ax in forewing incomplete	24
21	— Small species, the discoidal field in forewing of 3 rows. Numerous antenodal cross veins. Adult ♂ blue	
	<i>Trithemis dorsalis</i> (Rambur)	
	— Discoidal field in forewing of 2 rows. Forewing with 7 Ax or less	22
22	— Very small red-bodied species with short brown basal streak only on hindwing	
	<i>Aethriamanta rezia</i> Kirby	
	— Long-winged species with large brown or coloured patch on hindwing	
	<i>Urothemis</i> Brauer	23
23	— Abdomen with broad black stripe on most segments. ♂ with blue-black frons and blue abdomen in mature condition	
	<i>Urothemis edwardsi</i> (Selys)	
	— Abdomen with narrow black stripe only widened on segments near distal end. ♂ with red frons and red abdomen	
	<i>Urothemis assignata</i> (Selys)	
24	— Hindwing very broadly black in basal half	
	<i>Rhyothemis semihyalina</i> (Desjardins)	
	— Hindwing not broadly black at base	25
25	— Discoidal field on forewing expanding near outer end	26
	— Discoidal field on forewing not expanding	35
26	— Small species with abdomen much expanded on basal half, slender on outer half	
	<i>Acisoma panorpoides ascalaphoides</i> (Rambur)	
	— Abdomen not markedly swollen at base or only near extreme base	27
27	— Discoidal field of forewing starts with 2 rows. Only a small number of antenodal cross veins. Small species	28
	<i>Diplacodes</i> Kirby	
	— Discoidal field of forewing starts with 3 rows	29
28	— Abdomen less than 20 mm long. Pterostigma less than 2 mm long. Face of ♂ yellow	
	<i>Diplacodes exilis</i> Ris	
	— Abdomen over 20 mm long. Pterostigma at least 3 mm long. Face of mature ♂ black	
	<i>Diplacodes lefebvrei</i> (Rambur)	
29	— Pterostigma normally bicoloured. Wings at least in ♂ with broad orange or black areas	
	<i>Brachythemis</i> Brauer	30
	— Pterostigma unicoloured. Wings at most with trace of orange or with short brown streaks at base	31
30	— Wings without basal orange. ♂ black-bodied with black bar across middle of wings. Abdomen not swollen	
	<i>Brachythemis leucosticta</i> (Burmeister)	
	— Wings of ♂ very broadly amber in basal half, without black markings. Abdomen red in ♂, swollen in ♀	
	<i>Brachythemis lacustris</i> (Kirby)	
31	— Large grey-bodied, speckled species settling on rocks. Anal loop on	

hindwing long. Wings of ♀ brown at apex, in ♂ often with brown basal streaks	<i>Bradinyopyga cornuta</i> Ris	
— Moderate or smallish species with short anal loop on hindwing. No brown markings on wings but often orange at wing bases	<i>Crocothemis</i> Brauer	32
32 — Abdomen broad, very red in ♂, with orange wing-bases		33
— Abdomen slender. Wing-bases not orange		34
33 — Smaller species; pterostigma not more than 3 mm long and usually red	<i>Crocothemis sanguinolenta</i> (Burmeister)	
— Larger species; pterostigma over 3 mm, yellow	<i>Crocothemis erythraea</i> (Brullé)	
34 — Thorax and abdomen distinctly chequered. Pterostigma yellow or red	<i>Crocothemis saxicolor</i> Ris	
— Thorax and abdomen not chequered. Pterostigma red or reddish brown	<i>Crocothemis divisa</i> Baumann	
35 — Forewing with not more than 7½ antenodal cross veins		36
— Forewing with at least 8½ antenodals		37
36 — Triangle in forewing crossed. Abdomen in ♂ mainly red	<i>Sympetrum fonscolombi</i> (Selys)	
— Triangle in forewing free. Abdomen in ♂ slender, red at base, black and yellow in outer half	<i>Philonomon luminans</i> (Karsch)	
37 — Triangle on forewing well distal to triangle on hindwing. Large migratory species. Pterostigma longer in forewing than in hindwing		38
— Triangles almost at same level in forewing and hindwing. Pterostigma of same length in all wings		39
38 — Hindwing with large brown and orange basal zone	<i>Trapezostigma basilare</i> (Beauvois)	
— Hindwing with only a patch of pale orange near base	<i>Pantala flavescens</i> (Fabricius)	
39 — Anal loop on hindwing reaching the margin. Crepuscular species. ♂ with brown and white smear at nodus of hindwing	<i>Tholymis tillarga</i> (Fabricius)	
— Anal loop ending before margin on hindwing. Not crepuscular and without this nodal marking		40
40 — Large species, the thorax dark and metallic hued (if not pruinose blue)		41
— Small or smallish species. Body without metallic hue	<i>Trithemis</i> Brauer	43
41 — Pterostigma long, over 4 mm. Abdomen very swollen at base, then very slender	<i>Olpogastra lugubris</i> Karsch	
— Pterostigma usually under 4 mm. Abdomen normal. Usually found near rapid waters	<i>Zygonyx</i> Hagen	
42 — Thorax brown with yellowish lateral stripes. Abdomen brown with orange spots; never blue	<i>Zygonyx torrida</i> (Kirby)	
— Thorax and abdomen blue in mature ♂; without yellow lateral stripes on thorax	<i>Zygonyx natalensis</i> (Martin)	
43 — (♂ adult <i>Trithemis</i> only)		
Abdomen mainly black with yellow streaks, or bright blue		44
— Abdomen mainly red or reddish		46
44 — Abdomen broad, becoming coated with deep blue	<i>Trithemis risi</i> Longfield	

— Abdomen slender		45
45 — Hindwing with trace of basal orange and very short brown basal rays. Blue colour dark	<i>Trithemis basitincta</i> Ris	
— Hindwing without orange or brown at base. Blue colour pale	<i>Trithemis stictica</i> (Burmeister)	
46 — Abdomen broad		47
— Abdomen slender		48
47 — Abdomen scarlet. Wings broadly orange in basal half	<i>Trithemis kirbyi ardens</i> Gerstaecker	
— Abdomen plum-red or wine coloured. Wings with only small basal orange or brownish patch	<i>Trithemis annulata</i> (Beauvois)	
48 — Forewing without basal orange. Abdomen dull orange-red	<i>Trithemis werneri</i> Ris	
— Forewing with orange at base. Abdomen bright red		49
49 — Orange area at base of hindwing very broad, usually mottled with brown and reaching beyond the triangle	<i>Trithemis monardi</i> Ris	
— Orange area on hindwing much more restricted and not mottled with brown		50
50 — Abdomen not very slender and marked with black only on last three segments	<i>Trithemis pluvialis</i> Förster	
— Abdomen very slender, marked with black on most of the outer segments	<i>Trithemis arteriosa</i> (Burmeister)	

Trithemis females are omitted since they would add to the length and complexity of this key. They have been tabulated in the Author's "Dragonflies of Southern Africa" (1951).

Tetrathemis polleni (Selys, 1869)

Mpatamanga Gorge, 25th April and 17th May 1966, at small rock pools. Moderately widespread but local in Africa and Madagascar.

Hadrothemis scabrifrons Ris (1909)

Mkuwadzi Forest, 6th May 1966, 1 ♀, partially clad in spider's web, flying on mountain forest track. Zambia to Cameroons and East Africa; also Mozambique; local.

Nesciothemis farinosa (Förster, 1898)

Limpasa dambo, May 1966. Previously: Cholo (Wood, 20th February 1960). Common in most parts of Continental Africa.

Orthetrum abbotti Calvert (1892)

Although no Malawi examples have been examined by the Author this species is abundant in most parts of Africa. Madagascar examples seem rather different.

Orthetrum brachiale (Beauvois, 1805)

Mpatamanga Gorge, Mkuwadzi Forest, Kasitu River, May 1966. Previously: Mzimba (Gray). Abundant in Africa and neighbouring islands.

Orthetrum chrysostigma (Burmeister, 1839)

Mkuwadzi Forest, Limpasa dambo, Kasitu River, May 1966. Previously: Fort Hill (Gray), Nkata Bay (Eccles, 30th May 1961, 3rd June 1961). Abundant in Africa and neighbouring Asiatic and European territories.

Orthetrum falsum falsum Longfield (1955)
Zomba Mountain, Mkuwadzi Forest, May 1966.
Previously: Cholo (Wood, 20th February 1960), Mzimba (Gray).
Widespread in forests of Africa.

Orthetrum guineense Ris (1909)
Previously: Limpasa dambo (Eccles, 31st July 1960).
Widespread in Africa.

Orthetrum hintzii Schmidt (1951)
Mkuwadzi Forest, May 1966.
Previously: Mzimba (Gray), Nkata Bay (Eccles, 23rd April 1961).
Widespread in Africa.

Orthetrum icteromelas Ris (1909)
Nkamakama River (Central Province), 14th May 1966.
Widespread in Africa and Madagascar, although the continental examples seem somewhat different to the nominotypical Malagassian ones.

Orthetrum stemmale kalai Longfield (1936)
Limpasa dambo, May 1966.
Previously: Nkata Bay (Eccles, December 1961, 5th May 1962).
Central to Equatorial Africa.

Aethiothemis diamangae Longfield (1959)
Mkuwadzi Forest (particularly near experimental rubber tree plots), Limpasa dambo, May 1966.
A little known species of Angola and Zambia.

Aethiothemis ? mediofasciata Ris (1931)
It is not yet possible to distinguish between this species and *A. solitaria* (Martin) Ris (1908), if in fact they are distinct species.
Limpasa dambo, 11th and 12th May 1966.
Central and tropical Africa.

Palpopleura deceptor (Calvert, 1899)
Previously: Mzimba (Gray).
Widespread in Africa but local and seldom seen in any numbers.

Palpopleura jucunda Rambur (1842)
Limpasa dambo, Nkamakama River (Central Province), May 1966.
Widespread in continental Africa.

Palpopleura lucia (Drury, 1773), et f. *portia* (Drury)
Mpatamanga Gorge, Mkuwadzi Forest, Limpasa dambo, May 1966.
Previously: Mlanje (G. Arnold, December 1944), Fort Hill (Gray), Nkata Bay (Eccles, 1st August 1960), Limpasa dambo (Eccles, 31st July 1960).
Very widespread in Africa.

Thermochoria equivocata Kirby (1889)
Mkuwadzi Forest, Limpasa dambo, May 1966: just as abundant in this forest in May as it is in the same month at Mwinilunga, North West Zambia.
Central, equatorial Africa and Uganda.

Hemistigma albipuncta (Rambur, 1842)
Monkey Bay, Limpasa dambo, May 1966.
Previously: Port Herald, Kota Kota (Eccles, 29th May 1960), Limpasa dambo (Eccles, 31st July 1960).
Widespread in Africa.

Acisoma panorpoides ascalaphoides (Rambur, 1842)
Limpasa dambo, Nkamakama River, May 1966.
Most of Africa.

Diplacodes exilis Ris (1911)
Previously recorded from Malawi by Grünberg (1903).
Distribution somewhat dubious, confused with the next species.

Diplacodes lefebvrei (Rambur, 1842)
Mpatamanga Gorge, Monkey Bay, Chipoka, Mkuwadzi Forest, May 1966.
One from Mpatamanga Gorge was captured with a species of *Trichoptera* as prey.
Previously: Salima Bay, Nkata Bay (Eccles, 23rd May 1961).
Very widespread in Africa and Asia.

Brachythemis lacustris (Kirby, 1889)
Mpatamanga Gorge, Monkey Bay, Chipoka, May 1966.
Tropical and subtropical Africa.

Brachythemis leucosticta (Burmeister, 1839)
Mpatamanga Gorge, Kasitu River, May 1966.
Previously: Cholo (Wood, 20th February 1960), Lake Chirwa (G. Arnold, 12th November 1943), Nkata Bay (Eccles, 1st June 1960).
Africa and "Middle East".

Crocothemis divisa Baumann (1898)
Mkuwadzi Forest, May 1966.
Central to equatorial Africa.

Crocothemis erythraea (Brullé, 1832)
Limpasa dambo, May 1966.
Previously: Cholo (Wood, 20th February 1960).
All Africa, parts of Europe and Asia.

Crocothemis sanguinolenta (Burmeister, 1839)
Mpatamanga Gorge, Zomba Mountain, Mkuwadzi Forest, Limpasa dambo, May 1966.
Previously: Cholo (Wood, 20th February 1960), Zomba Mountain, Fort Hill (Gray).
Throughout Africa.

Crocothemis saxicolor Ris (1919)
Mpatamanga Gorge, May 1966, sight record on rocks amongst the next species (Whellan).
Previously: Malawi (Miss B. Rankine).
Very local on rocks in Rhodesia and Zambia.

Bradinopyga cornuta Ris (1911)
Mpatamanga Gorge, 25th April and 17th May 1966, on rocks, including typical ♂ and ♀ f. *subcancellata* Martin (1921). From a comparison of material it seem

probable that *f. subcancellata* is merely the more *mature condition*. Traces of the basal streaks of the latter may be evident in "*f. cornuta*".
Natal to East Africa.

Sympetrum fonscolombe (Selys, 1840)
No examples seen from Malawi but it is common in most parts of Africa as well as in parts of Europe and Asia.

Philonomon luminans (Karsch, 1893)
Previously: Mzimba (Gray).
Most parts of Ethiopian Africa.

Atoconeura biordinata Karsch (1899)
Previously: Mzimba (Gray), Nchenachena (6000') (Gray).
Central and tropical Africa.

Trithemis annulata (Beauvois, 1805)
Mpatamanga Gorge, Monkey Bay, Mkuwadzi Forest, April 1966.
All Africa, Southern Europe, Western Asia.

Trithemis arteriosa (Burmeister, 1839)
Mpatamanga Gorge, Limpasa dambo, Kasitu River, May 1966.
Previously: Cholo (Wood, 20th February 1960), Nkata Bay (Eccles, 7th June, 31st July and 1st August 1960), Mkuwadzi Forest (Eccles, 3rd June 1962).
All Africa; Western Asia.

Trithemis basitincta Ris (1912) *acornuta?*
Limpasa dambo, May 1966.
Subtropical and tropical Africa.

Trithemis dorsalis (Rambur, 1842)
No Malawi examples seen, but the species is widespread in South and Central Africa.

Trithemis kirbyi ardens Gerstaecker (1891)
Mpatamanga Gorge, Mkuwadzi Forest, Kasitu River, May 1966.
Widespread on the African continent.

Trithemis monardi monardi Ris (1931)
Limpasa dambo, May 1966.
South and Central Africa. Local.

Trithemis pluvialis Förster (1906)
Kasitu River, May 1966.
Previously: Limbe (no further data).
South to East Africa. Local.

Trithemis risi Longfield (1936)
Previously: Cholo (Wood, 20th February 1960) (recorded as *T. ellenbeckii* Förster, 1906), Mzimba (Gray, 12th March 1950), Zomba (June 1962).
Most of Africa.

Trithemis stictica (Burmeister, 1839)
Limpasa dambo, May 1966.
Previously: Nkata Bay (Eccles, 28th July and 1st August 1960, 2nd May 1962).
Widespread in Africa.

Trithemis werner Ris (1912)
Mpatamanga Gorge, May 1966. One of the females had unusual wing markings, instead of merely a pale orange basal area on hindwing: brown spots at apices, orange nodal spots on all wings, and only a trace at base of hindwing.
Very local: Zambezi and Limpopo valleys; Northern Kenya, Northern Uganda, Southern Sudan.

Zygonyx natalensis (Martin, 1900)
Mpatamanga Gorge, Kasitu River, May 1966.
Previously: Njakwa Gorge (Gray), Magombe (September 1963).
Widespread in Africa.

Zygonyx torrida (Kirby, 1889)
Chipoka, Kasitu River, May 1966.
All Africa; parts of Europe and Asia.

Olpogastra lugubris Karsch (1895)
Mpatamanga Gorge, May 1966.
Central to Tropical Africa.

Rhyothemis semihyalina (Desjardins, 1832)
The only record so far seen is that of Grünberg (1903), but it is found almost throughout Africa and neighbouring islands.

Pantala flavescens (Fabricius, 1798)
Although there are few records from Malawi, Kirby (1898), Grünberg (1903), this is probably the most widely distributed species in the World: Africa, Europe, Asia, Australia, America.

Tholymis tillarga (Fabricius, 1798)
Mpatamanga Gorge, Mkuwadzi Forest, May 1966, at dusk.
Previously: Nkata Bay (Eccles, December 1961).
This crepuscular species ranges through Africa, much of Asia and Australasia.

Trapezostigma basilare (Beauvois, 1805)
Previously: Mzimba (Gray) and recorded by Grünberg (1903).
Like *Pantala flavescens* (Fabricius) this is evidently a migrant in Africa and Asia.

Urothemis assignata (Selys, 1872)
Recorded from Malawi as long ago as Kirby (1898), but common in most parts of the Ethiopian region.

Urothemis edwardsi (Selys, 1849)
Limpasa dambo, May 1966.
Previously recorded by Grünberg (1903).
Most parts of Africa.

Aethriamanta rezia Kirby (1889)
Monkey Bay, 28th May 1966, a solitary ♀.
Local in tropical and subtropical Africa.

TAXONOMIC REVISION IN THIS PAPER

Teinobasis malawiensis spec. nov.
Enallagma angolicum nom. nov. pro *risi* Pinhey (nec Schmidt)
Microgomphus witchwoodensis Pinhey is a synonym of *M. nyassicus* (Grünberg).

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ARNOLDIA

(RHODESIA)

SERIES OF MISCELLANEOUS PUBLICATIONS

NATIONAL MUSEUMS OF SOUTHERN RHODESIA

No. 34

Volume 2

24th October, 1966

A REVIEW OF THE *RIOPA SUNDEVALLI* GROUP (SAURIA : SCINCIDAE) IN SOUTHERN AFRICA

DONALD G. BROADLEY, *Umtali Museum, Rhodesia*

Mittleman (1952) resurrected *Mochlus* Günther from the synonymy of *Riopa* Gray and has been followed by Laurent (1964) and Laurent & Gans (1965), although Loveridge (1957) rejected Mittleman's fragmentation of the Lygosomine genera. Mittleman distinguished *Mochlus* from *Riopa* on the lack of a brille in the lower eyelid and more robust body and limbs. The genera *Mabuya*, *Eremias* and *Platysaurus* all contain species both with and without a brille, so this character is of doubtful phylogenetic significance. Mittleman gave the range for *Mochlus* as Africa, China, Indo-China and the Philippines, with *Riopa* in India, Burma and Kenya—suggesting that the brille may have been acquired independently in Africa and Asia. As there is no clear divergence in adaptive trends I regard *Mochlus* as a synonym of *Riopa*.

Eumices (Riopa) sunderallii (sic) was described by A. Smith (1849) from "country to the eastward of Cape Colony". This has usually been taken to refer to Natal, but no *Riopa* have subsequently been collected in Natal, so the type probably came from the western Transvaal. Many closely related forms were described, but their status remained obscure until 1932.

Loveridge (1933) distinguished two forms in East Africa as follows:—

"Supranasal not fused with anterior nasal; size larger. Back usually much spotted, though occasionally uniform *R. s. sundevallii*
Supranasal fused with anterior nasal; size smaller. Back usually uniform brown, occasionally spotted *R. s. modestum*"

Parker (1932) revised the *R. sundevalli* group and allied species (which he included in the genus *Lygosoma*) and distinguished four forms as follows:

- A. Supranasals present; prefrontals normally distinct; scales in 24-30 rows at midbody; second toe extending well beyond the fifth, which usually has 5 or 6 (rarely 4 or 7) subdigital lamellae. Adults measuring more than 100 mm from snout to vent. Widespread *L. sundevallii* Smith
- B. Supranasals absent; prefrontals normally distinct; scales in 24-28 rows at midbody (10% with 24). Adults much less than 100 mm from snout to vent.
- (i) Second toe extending beyond the fifth, which has 5-6 subdigital lamellae. Tanganyika and E. Kenya *L. modestum modestum* (Günther)

Received, 20th September, 1966