

ODONATA OF DOON VALLEY—1. ANISOPTERA

By

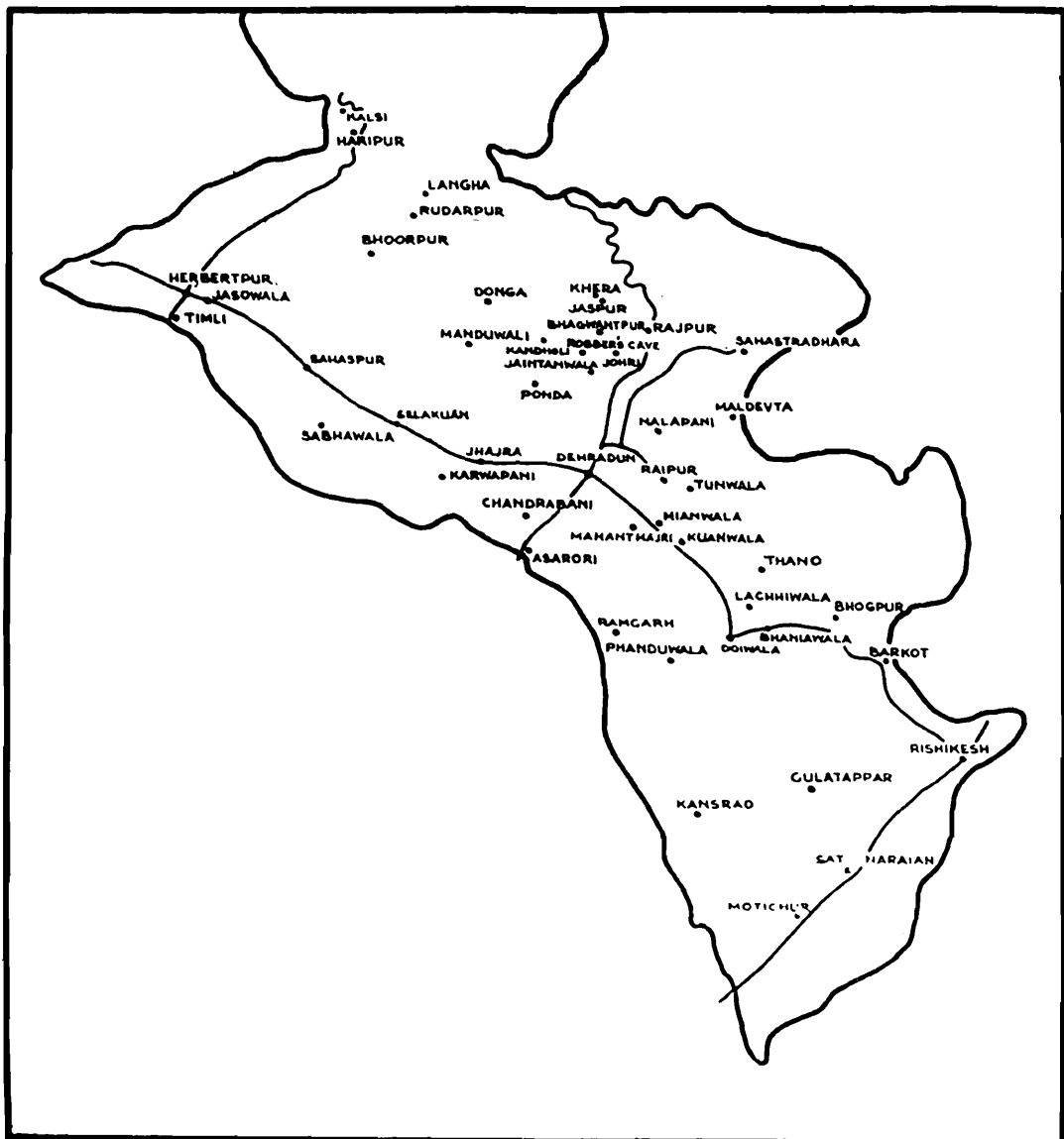
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(With 6 Text-figures)

INTRODUCTION

Dragonfly fauna of Doon Valley is very inadequately known. Except for a few scattered references no comprehensive account is available on the Odonata of this Valley. Keeping this in view systematic collection of this group was made from all over the valley (Text-fig. 1) in



Text-fig. 1, Map of Doon Valley showing the collection Sites.

the last few years, as a result of which a larger representative collection of this group has accumulated in the Zoological Survey of India. The results based on this collection are presented in this report.

Most of the species agree fairly well with the descriptions of Fraser (1933, 1934, 1936), but in a few species marked differences were observed and have been recorded.

ACKNOWLEDGEMENTS

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Suborder *ANISOPTERA*

Superfamily *AESHNOIDEA*

Family *GOMPHIDAE*

Subfamily *GOMPHINAE*

***Anormogomphus heteropterus* Selys**

1854. *Anormogomphus heteropterus* Selys, *Bull. Acad. Belg.* **21**(2): 61.

1934. *Anormogomphus heteropterus*, Fraser, *Fauna Brit. Ind. Odon.* **2**: 174-176.

Material: Donga, Gula Tappar, Haripur, Kalsi, Lachhiwala, Mianwala, Ramgarh, Sahastradhara and Timli, one female from each locality.

Measurements: Female—Abdomen, 35 mm. fore wing, 31-33.5 mm. hind wing, 31 mm.

Remarks: No male could be collected. It is the first record of this species from U.P. Previously it is known only from Punjab and Bihar.

***Anormogomphus kiritschenkoi* Bartenev**

1913. *Anormogomphus kiritschenkoi* Bartenev, *Revue Russe d'Ent.*, **13**: 179.

1934. *Anormogomphus kiritschenkoi*, Fraser, *Fauna Brit. Ind. Odon.* **2**: 176-177.

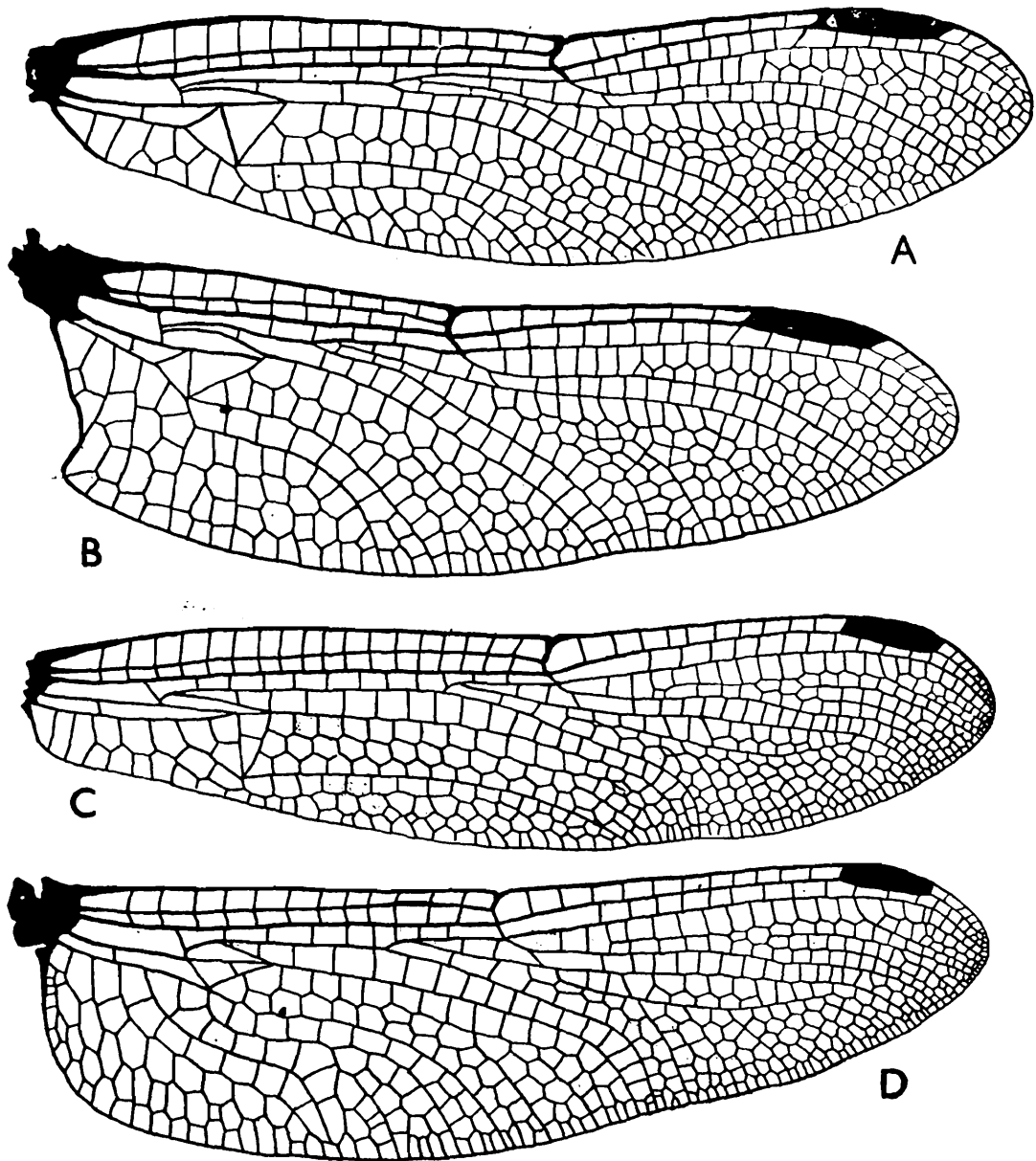
Material: Herbertpur, 1 ♀.

Measurements: Female—Abdomen, 30 mm. fore wing, 27 mm. hind wing, 25.5 mm.

Remarks: A very rare species. It has recently been recorded from India for the first time (Singh and Prasad, 1974).

Mesogomphus lineatus (Selys)

(Text-fig. 2, A & B)

1850. *Gomphus lineatus* Selys, *Rev. Odon.* p. 386.1934. *Mesogomphus lineatus*, Fraser, *Fauna Brit. Ind. Odon.* 2: 230-234.

Text-fig. 2. (A & B) *Mesogomphus lineatus* (Selys) A. fore wing, B. hind wing; (C & D) *Cratilla lineata* (Braner), C. fore wing, D. hind wing.

Material: Bhaniawala, 1 ♂; Asarori, 1 ♂; Donga, 1 ♀; Kaudholi, 1 ♂; Langha, 1 ♂; Motichur, 1 ♂; Rishikesh, 1 ♂; Raipur, 2 ♂♂; and Sahastradhara, 3 ♀♀.

Measurements: Male—Abdomen, 29 mm. fore wing, 25 mm. hind wing, 23 mm. Female—Abdomen, 33 mm. fore wing, 31 mm. hind wing, 29 mm.

Remarks: A very common species.

Onychogomphus M-flavum Selys

1854. *Onychogomphus bistrigatus* Selys, *Mon. Gomph.* p. 22.

1934. *Onychogomphus M-flavum*, Fraser, *Fauna Brit. Ind. Odon.* 2: 250-254.

Material: Herbertpur, 1 ♂; Robber's Cave, 1 ♂; and Sahastradhara, 4 ♂♂.

Measurements: Male—Abdomen, 34 mm. fore wing, 31 mm. hind wing, 30 mm.

Remarks: This species is known only from Darjeeling and is reported from U.P. for the first time. The material studied consists of males only.

Onychogomphus cerastes (Selys)

1854. *Ophiogomphus cerastes* Selys, *Bull. Acad. Belg.* 21(2): 41.

1934. *Onychogomphus cerastes*, Fraser, *Fauna Brit. Ind. Odon.* 2: 260-261.

Material: Sahastradhara, 3 ♂♂; and Timli, 1 ♂;

Measurements: Male—Abdomen, 32 mm. fore wing, 30 mm. hind wing, 28 mm.

Remarks: A rare species.

Distribution: It is known from Nepal and north India.

Lamelligomphus risi (Fraser)

1922. *Gomphus risi* Fraser, *Mem. Dept. Agric. India*, 7(7): 73-74.

1934. *Lamelligomphus risi*, Fraser, *Fauna Brit. Ind. Odon.* 2: 273-275.

Material: Rishikesh, 1 ♂.

Measurements: Male—Abdomen, 38 mm. fore wing, 35 mm. hind wing, 34 mm.

Remarks: A very rare species.

Distribution: It is known from eastern India only.

Nepogomphus modestus (Selys)

1878. *Onychogomphus modestus* Selys, *Bull. Acad. Belg.* 46: 423.

1934. *Nepogomphus modestus*, Fraser, *Fauna Brit. Ind. Odon.* 2: 285-286.

Material: Donga, 1 ♂; Motichur, 1 ♂; 1 ♀; Rajpur, 1 ♂, 1 ♀; Robber's Cave, 1 ♂; Sahastradhara, 7 ♂♂, 10 ♀♀; and Timli, 2 ♂♂.

Measurements: Male—Abdomen, 23 mm. fore wing, 24 mm. hind wing, 22.5 mm. Female—Abdomen, 24 mm. fore wing, 24 mm. hind wing, 22.5 mm.

Remarks: This species is known from Bengal and Assam, Burma and Sumatra. This is the first record of this species from north-west India.

Subfamily ICTINOGOMPHINAE

Ictinogomphus rapax (Rambur)1842. *Diastatomma rapax* Rambur, *Ins. Neurop.* p. 169.1934. *Ictinus rapax*, Fraser, *Fauna Brit. Ind. Odon.* 2: 373-376.*Material*: Bhaniawala, 1 ♂; and Rishikesh, 1 ♂.*Measurements*: Male—Abdomen, 46 mm. fore wing, 42 mm. hind wing, 41 mm.*Remarks*: A very rare species. Differs from the published account in having dark brown basal markings of both the wings extended up to first antenodal nervure, and in having brown membrane.

Family AESHNIDAE

Subfamily ANACTINAE

Anax immaculifrons Rambur1842. *Anax immaculifrons* Rambur, *Ins. Neurop.* p. 189.1936. *Anax immaculifrons*, Fraser, *Fauna Brit. Ind. Odon.* 3: 145-146.*Material*: Rajpur, 1 ♂; and Sahastradhara, 2 ♂♂;*Measurements*: Male—Abdomen, 51.5 mm. fore wing, 56-58 mm. hind wing, 55 mm.*Remarks*: A very rare species. This is the first record of this species from Doon Valley.**Anax guttatus** (Burmeister)1839. *Aeschna guttata* Burmeister, *Handb. Ent.* 2: 840.1936. *Anax guttatus*, Fraser, *Fauna Brit. Ind. Odon.* 3: 140-142.*Material*: Ballupur (Dehra Dun), 1 ♂.*Measurements*: Male—Abdomen, 54 mm. fore wing, 51 mm. hind wing, 50 mm.*Remarks*: Very rare. According to Fraser (1936) the pterostigma extends over $2\frac{1}{2}$ cells in all the wings. But in this specimen it extends over $3\frac{1}{2}$ cells in the right fore wing. Discoidal cell in hind wings comprises only two cells.

Superfamily LIBELLULOIDEA

Family GORDULIIDAE

Subfamily EPOPTHALMIINAE

Macromia moorei Selys1874. *Macromia moorei* Selys, *Bull. Acad. Belg.* 37: 28.1936. *Macromia moorei*, Fraser, *Fauna Brit. Ind. Odon.* 3: 164-166.*Material*: Kandholi, 4 ♂♂; Dhera Dun, 1 ♂; and Sahastradhara, 1 ♂; 2 ♀♀.

Measurements: Male—Abdomen, 47 mm. fore wing, 46 mm. hind wing, 44 mm. Female—Abdomen, 47 mm. fore wing, 47 mm. hind wing, 46 mm.

Remarks: Very rare species.

Distribution: It is known from N. E. Himalayas, Simla, and Kumaon Hills.

Family LIBELLULIDAE

Subfamily LIBELLULINAE

Cratilla lineata (Brauer)

(Text-fig. 2, C & D)

1878. *Orthemis lineata* Brauer, *Sitzungsber. Akad. Wien.* 77: 9.

1936. *Cratilla lineata*, Fraser, *Fauna Brit. Ind. Odon.* 3: 286-288.

Material: Asarori, 1♂; Donga, 1♂; Kuanwala, 2♂♂; and Timli, 1♂.

Measurements: Male—Abdomen, 28 mm. fore wing, 35.5 mm. hind wing, 34 mm.

Remarks: A rare species. It is usually found in thick forest quite far from ponds and streams. This species has recently been reported from north-west India (Singh and Prasad, 1974).

Potamarcha obscura (Rambur)

1842. *Libellula obscura* Rambur, *Ins. Neurop.* p. 64.

1936. *Potamarcha obscura*, Fraser, *Fauna Brit. Ind. Odon.* 3: 289-291.

Material: Jasowala, 1♂; Lachhiwala, 2♂♂; and Timli, 3♂♂, 3♀♀.

Measurements: Male—Abdomen, 28.5 mm. fore wing, 34 mm. hind wing, 32.5 mm. Female —Abdomen, 28 mm. fore wing, 34 mm. hind wing, 32 mm.

Remarks: It is commonly found near small, weedy ponds and also from thick forest far away from ponds and streams.

Orthetrum brunneum brunneum (Fonscolombe)

1837. *Libellula brunnea* Fonscolombe, *Ann. Soc. Ent. France*, 6: 141.

1936. *Orthetrum brunneum brunneum*, Fraser, *Fauna Brit. Ind. Odon.* 3: 294-295.

Material: Donga, 2♀♀; Kansrao, 1♀; Kandholi, 1♀; Karwapani, 1♀; Phanduwala, 2♀♀; Ramgarh, 1♀; and Sahastradhara, 6♀♀.

Measurements: Female—Abdomen, 29 mm. fore wing, 35 mm. hind wing, 34 mm.

Remarks: Fairly common species.

Orthetrum taeniolatum (Schneider)1845. *Libellula taeniolata* Schneider, *Stett. Ent. Zeit.* 6: 1111936. *Orthetrum taeniolatum*, Fraser, *Fauna Brit. Ind. Odon.* 3: 296-298.

Material: Asarori, 1 ♂, 1 ♀; Barkot, 1 ♀; Bhaniawala, 2 ♂♂; Bhagwant Pur, 1 ♂, 1 ♀; Bhoorpur, 5 ♂♂; Donga, 2 ♂♂, 2 ♀♀; Haripur, 5 ♂♂, 3 ♀♀; Herbertpur, 9 ♂♂, 12 ♀♀; Johari, 1 ♂; Jaintanwala, 1 ♂; Jaspur, 1 ♂; Jhajra, 2 ♂♂; 8 ♀♀; Kandholi, 8 ♂♂, 3 ♀♀; Karwapani, 1 ♂; Kanarao, 3 ♂♂, 7 ♀♀; Kalsi, 2 ♂♂; Kuanwala, 1 ♀; Khera, 1 ♀; Langha, 3 ♂♂; Lachhiwala, 2 ♀♀; Maldevta, 1 ♂, 1 ♀; Motichur, 7 ♂♂, 6 ♀♀; Nalapani, 1 ♂, Pondha, 1 ♂; Phanduwala, 3 ♂♂; Prem Nagar, 1 ♂; Raipur, 10 ♂♂, 4 ♀♀; Rajpur, 3 ♂♂, 2 ♀♀; Robber's Gave, 1 ♂; Satnarain, 1 ♂; Sahaspur, 3 ♂♂, 1 ♀; Sahastradhara, 30 ♂♂, 10 ♀♀; Timli, 6 ♂♂; 2 ♀♀; and Thano, 1 ♂.

Measurements: Male—Abdomen, 24 mm. fore wing, 29 mm. hind wing, 27 mm. Female—Abdomen, 22-23.5 mm. fore wing, 28 mm. hind wing, 27 mm.

Remarks: A very common species found near as well as away from ponds and streams. It is often seen resting on dry or moist sand and is seldom found resting on twigs.

Orthetrum chrysostigma luzonicum (Brauer)1868. *Libella luzonica* Brauer, *Verh. Zool.-bot. Ges. Wien*, 18: 169, 732.1936. *Orthetrum chrysostigma luzonicum*, Fraser, *Fauna Brit. Ind. Odon.* 3: 298-300.

Material: Herbertpur, 1 ♀; Motichur, 1 ♂; Robber's Gave, 1 ♂, 1 ♀; and Rishikesh, 2 ♂♂, 1 ♀.

Measurements: Male—Abdomen, 29 mm. fore wing, 29 mm. hind wing, 27 mm. Female—Abdomen, 28 mm. fore wing, 32 mm. hind wing, 31 mm.

Remarks: It differs from the published description in the following features. Middle portion of labium is black and its sides are pale yellow; face slightly greenish yellow; rows of cells between 1 *Riii* and *Rspl* always 2; reticulation in subcostal, cubital and discoidal areas may be black or yellow.

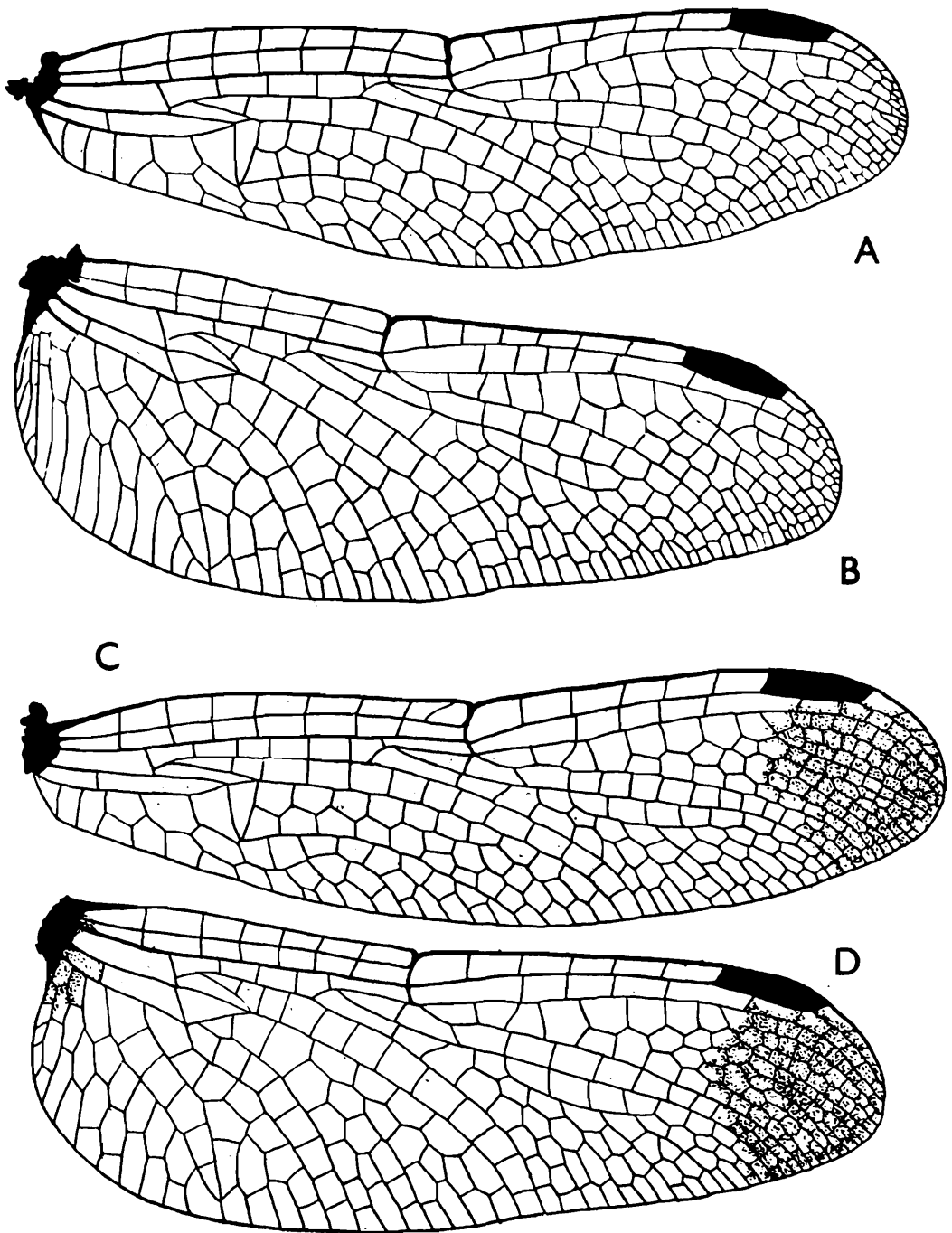
Orthetrum sabina (Drury)

(Text-fig. 3, A & B)

1770. *Libellula sabina* Drury, *Ill. Exot. Ins.* 1: 114, 115.1936. *Orthetrum sabina*, Fraser, *Fauna Brit. Ind. Odon.* 3: 300, 302.

Material: Asarori, 1 ♂, 1 ♀; Bhoorpur, 1 ♂; Gula Tappar, 1 ♂, 1 ♀; Herbertpur, 1 ♂, 10 ♀♀; Jaintanwala, 1 ♀; Jasowala, 1 ♂; Johari, 1 ♂; Kansrao, 5 ♀♀; Mahant Majri, 3 ♂♂, 2 ♀♀; Rishikesh, 1 ♂, 2 ♀♀; Ramgarh, 1 ♀; Sahaspur, 3 ♀♀; Satnarain, 1 ♀; Sahastradhara, 1 ♂; and Timli, 5 ♂♂.

Measurements: Male—Abdomen, 33 mm. fore wing, 30-34 mm. hind wing, 30-33 mm. Female—Abdomen, 31 mm. fore wing, 33 mm. hind wing, 30 mm.



Text-fig. 3. (A & B) *Orthetrum sabina* (Drury), A. fore wing, B. hind wing; (C & D) *Brachydiplax sabina* (Rambur) C. fore wing, D. hind wing.

Remarks: A very common species. It can be seen flying in large numbers in paddy fields and near the streams. Specimens of this species collected from moist habitats have greenish-yellow thorax and abdomen marked with black, while those collected from comparatively drier habitats are creamy yellow with black markings.

***Orthetrum triangulare triangulare* (Selys)**

1878. *Libella triangularis* Selys, *Mitth. Mus. Dresden.* p. 314.

1936. *Orthetrum triangulare triangulare*, Fraser, *Fauna Brit. Odon.* 3: 305-307.

Material: Donga, 5 ♂♂, 1 ♀; Kansrao, 1 ♂; Kandholi, 12 ♂♂; Kalsi, 1 ♂; Lachhiwala, 1 ♂; Nalapani, 6 ♂♂; Rajpur, 3 ♂♂; Raipur, 1 ♂; Robber's Gave, 2 ♂♂; and Sahastradhara, 65 ♂♂, 1 ♀.

Measurements: Male—Abdomen, 27-28.5 mm. fore wing, 36-39 mm. hind wing, 35-38 mm. Female—Abdomen, 29 mm. fore wing, 38-40 mm. hind wing, 37-39 mm.

Remarks: It is one of the commonest species. It differs from the published account in having its pterostigma extended over more than two cells—extending over half or a even more of the third cell.

***Orthetrum pruinosum neglectum* (Rambur)**

1842. *Libellula neglecta* Rambur, *Ins. Neurop.* p. 86.

1936. *Orthetrum pruinosum neglectum*, Fraser, *Fauna Brit. Ind. Odon.* 3: 311-313.

Material: Asarori, 5 ♂♂, 2 ♀♀; Bhogpur, 1 ♂, 1 ♀; Barkot, 2 ♂♂; Bhoorpur, 1 ♂, 1 ♀; Bhaniawala, 2 ♂♂; Ballupur, 3 ♂♂; Donga, 8 ♂♂; Dehradun, 1 ♂, 1 ♀; Herbertpur, 9 ♂♂, 5 ♀♀; Jaintanwala, 1 ♂; Kandholi, 18 ♂♂, 2 ♀♀; Kalsi, 1 ♂, 1 ♀; Kansrao, 6 ♂♂, 3 ♀♀; Lachhiwala, 3 ♂♂, 2 ♀♀; Langha, 7 ♂♂, 1 ♀; Motichur, 4 ♂♂; Nalapani, 2 ♂♂, 1 ♀; Rishikesh, 5 ♂♂, 3 ♀♀; Robber's Gave, 6 ♂♂, 2 ♀♀; Raipur, 13 ♂♂, 4 ♀♀; Rajpur, 5 ♂♂, 3 ♀♀; Sahaspur, 5 ♂♂, 1 ♀; Sabhawala, 1 ♂; Sahastradhara, 24 ♂♂, 8 ♀♀; and Timli, 7 ♂♂, 2 ♀♀.

Measurements: Male—Abdomen, 28 mm. fore wing, 35.5 mm. hind wing, 34 mm. Female—Abdomen, 25.5—28 mm. fore wing, 34-37 mm. hind wing, 32-36 mm.

Remarks: A very common species, easily distinguished by its bright red abdomen.

***Orthetrum glaucum* (Brauer)**

1865. *Libellula glauca* Brauer, *Verh. zool.-bot. Ges. Wien*, 15: 1012.

1936. *Orthetrum glaucum*, Fraser, *Fauna Brit. Ind. Odon.* 3: 307-309.

Material: Asarori, 5 ♂♂; Donga, 16 ♂♂; Haripur, 1 ♂; Kandholi, 13 ♂♂; 1 ♀; Kalsi, 1 ♂; Kansrao, 2 ♂♂, 1 ♀; Lachhiwala, 1 ♂; Manduwala, 1 ♂; Motichur, 3 ♂♂; Nalapani, 2 ♂♂; Rajpur, 13 ♂♂; Ramgarh, 1 ♂; Raipur, 8 ♂♂; Robber's Gave, 3 ♂♂; Sahastradhara, 24 ♂♂; and Satnarain, 1 ♂.

Measurements: Male—Abdomen, 28.5-30 mm. fore wing, 36.5-38.5 mm. hind wing, 35-37 mm. Female—Abdomen, 29.30 mm. fore wing, 35-37 mm. hind wing, 34-36 mm.

Remarks: A common species.

***Orthetrum japonicum internum* MacLachlan**

1894. *Orthetrum japonicum internum* MacLachlan, *Ann. Mag. Nat. Hist.* 13: 431.

1936. *Orthetrum japonicum internum*, Fraser, *Fauna Brit. Ind. Odon.* 3: 304-305.

Material: Kansrao, 1 ♀; Rajpur, 1 ♂, 1 ♀; Robber's Gave, 1 ♂; and Sahastradhara, 2 ♂♂, 1 ♀;

Measurements: Male—Abdomen, 27.5 mm. fore wing, 35 mm. hind wing, 33 mm. Female—Abdomen, 27.5 mm. fore wing, 35 mm. hind wing, 33.5 mm.

Remarks: A fairly common species.

Subfamily DIASTAPIDINAE

Palpopleura sexmaculata sexmaculata (Fabr.)

1787. *Libellula sexmaculata* Fabricius, *Mant. Ins.* 1: 338.

1936. *Palpopleura sexmaculata sexmaculata*, Fraser, *Fauna Brit. Ind. Odon.* 3: 318-320.

Material: Barkot, 1 ♀; Bhoorpur, 1 ♂; Donga, 3 ♂♂, 2 ♀♀; Herbertpur, 9 ♂♂, 10 ♀♀; Johari, 1 ♀; Kalsi, 2 ♂♂; Gula Tappar, 3 ♂♂; Kuanwala, 1 ♂; Kandholi, 14 ♂♂, 5 ♀♀; Kansrao, 9 ♂♂, 1 ♀; Lachhiwala, 2 ♂♂; Langha, 8 ♂♂, 8 ♀♀; Motichur, 5 ♂♂, 7 ♀♀; Maldevta, 1 ♀; Rajpur, 33 ♂♂, 11 ♀♀; Rishikesh, 22 ♂♂, 14 ♀♀; Raipur, 1 ♂; Sahastradhara, 26 ♂♂, 35 ♀♀; and Timli, 1 ♂, 2 ♀♀;

Measurements: Male—Abdomen, 13 mm. fore wing, 19 mm. hind wing, 18 mm. Female—Abdomen, 11.5 mm. fore wing, 19 mm. hind wing, 16-18 mm.

Remarks: A very common species. It differs from the published account as follows: Hind wings may be tinted with yellow throughout or only in the basal half. In majority of the specimens black stripe of cubital space in the fore wing covers hypertrigone, subtrigone and discoidal cells. Black stripe of the cubital space in the hind wing also covers discoidal cells and a few cells of the anal area.

Subfamily BRACHYDIPLACTINAE

Brachydiplax sobrina (Rambur)

(Text-fig. 3, G & D)

1842. *Libellula sobrina* Rambur, *Ins. Neurop.* p. 114.

1936. *Brachydiplax sobrina*, Fraser, *Fauna Brit. Ind. Odon.* 3: 325-327.

Material: Bhaniawala, 1 ♂; and Gula Tappar, 1 ♂.

Measurements: Male—Abdomen, 19 mm. fore wing, 27 mm. hind wing, 25.5 mm.

Remarks: A very rare species. It has recently been recorded from north-west India (Singh and Prasad, 1974).

Subfamily SYMPETRINAE

Acisoma panorpoides panorpoides Rambur

(Text-fig. 4, A & B)

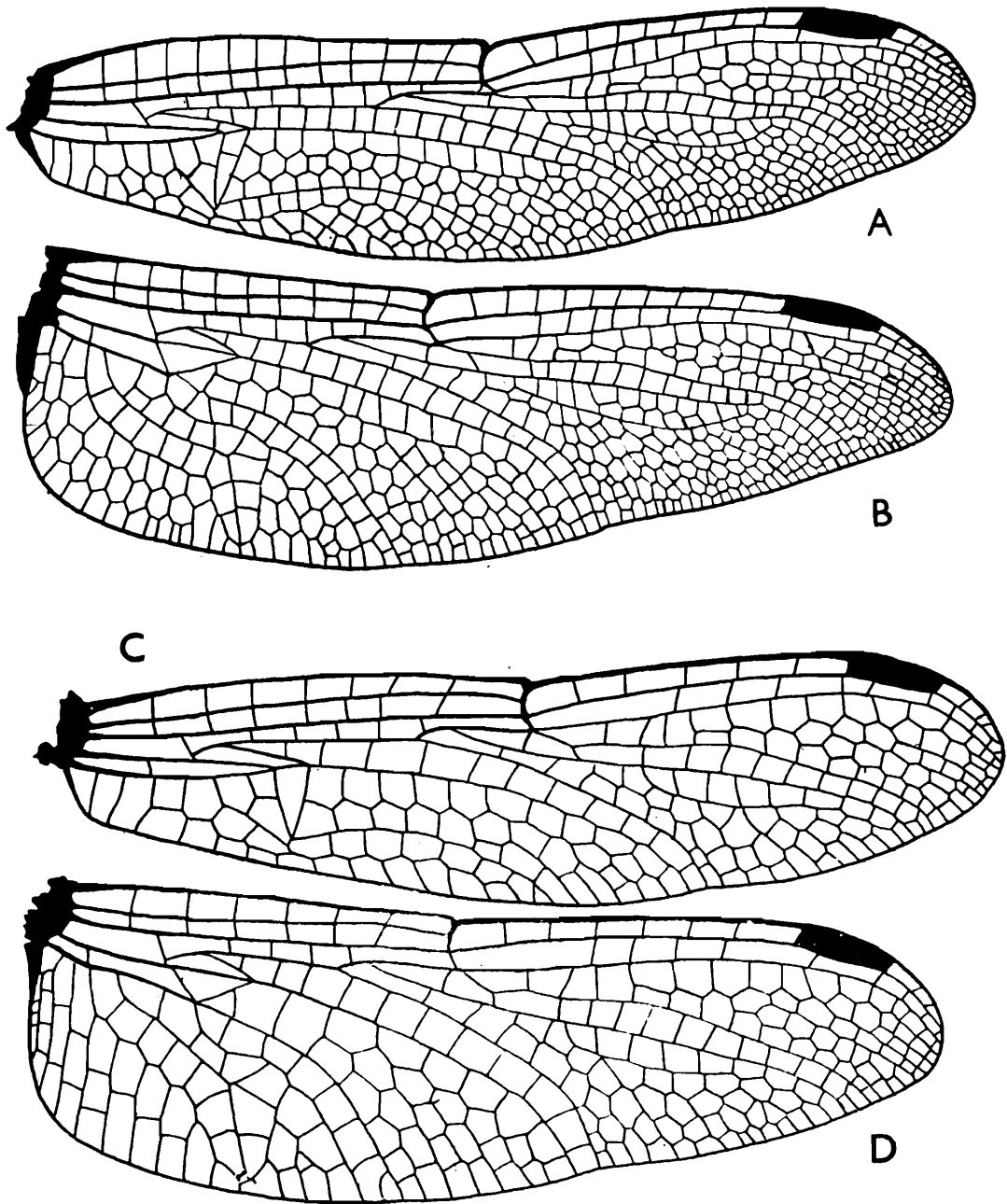
1842. *Acisoma panorpoides* Rambur, *Ins. Neurop.* p. 28.

1936. *Acisoma panorpoides panorpoides.*, Fraser, *Fauna Brit. Ind. Odon.* 3: 330-331.

Material: Bhaniawala, 5 ♂♂, 6 ♀♀; Mianwala, 1 ♂; Rishikesh, 10 ♂♂, 9 ♀♀; Herbertpur, 1 ♂; and Selakuan, 2 ♂♂.

Measurements: Male—Abdomen, 17 mm. fore wing, 22 mm. hind wing, 20 mm. Female—Abdomen, 16.5-17.5 mm. fore wing, 22-23 mm. hind wing, 20-21 mm.

Remarks: It is the first record of this species from north-west India.



Text-fig. 4. (A & B) *Acisoma panorpoides panorpoides* Rambur, A. fore wing, B. hind wing, (C & D) *Diplacodes nebulosa* (Fabricius), C. fore wing, D. hind wing.

***Diplacodes nebulosa* (Fabricius)**

(Text-fig. 4, C & D)

1793. *Libellula nebulosa* Fabricius, *Ent. Syst.* 2: 379.

1936. *Diplacodes nebulosa*, Fraser, *Fauna Brit. Ind. Odon.* 3: 335-336.

Material: Mianwala, 5 ♂♂, 12 ♀♀.

Measurements: Male—Abdomen, 13-14.5 mm. fore wing, 19 mm. hind wing, 17.5 mm. Female—Abdomen, 13 mm. fore wing, 19 mm. hind wing, 17.5 mm.

Remarks: A very rare species.

Distribution: It is known to extend from Western India to Australia.

Diplacodes trivialis (Rambur)

1842. *Libellula trivialis* Rambur, *Ins. Neurop.* p. 115.

1936. *Diplacodes trivialis*, Fraser, *Fauna Brit. Ind. Odon.* 3: 336-338.

Material: Mianwala, 4 ♂♂.

Measurements: Male—Abdomen, 19 mm. fore wing, 20 mm. hind wing, 19 mm.

Remarks: A very rare species.

Distribution: Extends from the Seychelles to the Pacific through India, Sri Lanka, Burma, Philippines to Formosa.

Crocothemis servilia servilia (Drury)

1770. *Libellula servilia* Drury, *Ill. Ex. Ins.* 1: 112, 113.

1936. *Crocothemis servilia servilia*, Fraser, *Fauna Brit. Ind. Odon.* 3: 345-347.

Material: Asarori, 11 ♂♂, 2 ♀♀; Bhoorpur, 2 ♂♂, 2 ♀♀; Barkot, 3 ♂♂, 1 ♀; Bhogpur, 1 ♀; Bhaniawala, 3 ♂♂; Donga, 1 ♂; Dehradun, 3 ♂♂; Doiwala, 2 ♂♂, 1 ♀; Gula Tappar, 2 ♂♂, 2 ♀♀; Herbertpur, 46 ♂♂, 43 ♀♀; Haripur, 3 ♂♂, 2 ♀♀; Jaintanwala, 1 ♂; Johari, 1 ♀; Kansrao, 10 ♂♂, 7 ♀♀; Kuanwala, 2 ♀♀; Karwapani, 3 ♂♂, 4 ♀♀; Jaspur, 1 ♂; Jhajra, 2 ♂♂, 2 ♀♀; Kalsi, 3 ♂♂; Kandholi, 3 ♂♂, 1 ♀; Langha, 7 ♂♂, 8 ♀♀; Lachhiwala, 7 ♂♂, 5 ♀♀; Motichur, 3 ♂♂, 11 ♀♀; Mianwala, 22 ♂♂, 2 ♀♀; Manduwala, 1 ♂, 2 ♀♀; Maldevta, 7 ♂♂, 2 ♀♀; Phanduwala, 2 ♂♂, 6 ♀♀; Pondha, 2 ♂♂, 3 ♀♀; Ramgarh, 3 ♀♀; Rishikesh, 16 ♂♂, 11 ♀♀; Raipur, 34 ♂♂, 9 ♀♀; Rajpur, 1 ♂, 1 ♀; Robber's Cave 34 ♂♂, 9 ♀♀; Sahhawala, 2 ♀♀; Sahastradhara, 28 ♂♂, 14 ♀♀; Satnarain, 9 ♂♂, 8 ♀♀; Sahaspur, 16, ♂♂, 6 ♀♀; Tunwala, 1 ♀; and Timli, 24 ♂♂, 15 ♀♀;

Measurements: Male—Abdomen, 22-25 mm. fore wing, 27.5-31 mm. hind wing, 26-29 mm. Female—Abdomen, 19-21.5 mm. fore wing, 27-28.5 mm. hind wing, 27 mm.

Remarks: A very common species. It differs from the published account in the following features. Labium, labrum and anteclypeus are light yellow while rest of the face is blood red.

Bradinopyga geminata (Rambur)

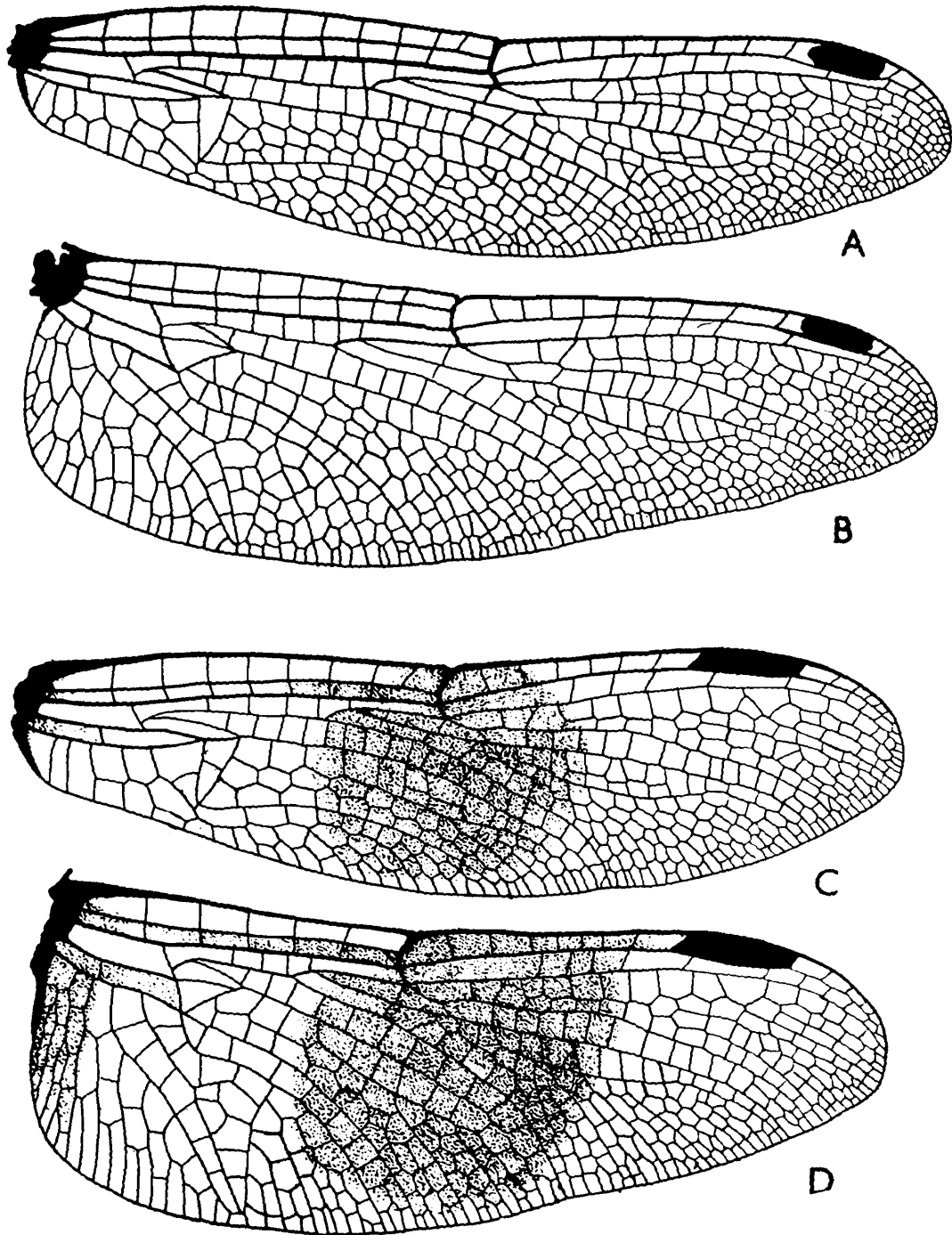
(Text-fig. 5, A & B)

1842. *Libellula geminata* Rambur, *Ins. Neuorp.*, p. 90.

1936. *Bradinopyga geminata*, Fraser, *Fauna Brit. Ind. Odon.* 3: 349-350.

Material: Sahastradhara, 1 ♂, 2 ♀♀; and DehraDun, 5 ♂♂, 2 ♀♀;

Measurements: Male—Abdomen, 25 mm. fore wing, 33 mm. hind wing, 32 mm. Female—Abdomen, 25 mm. fore wing, 33-35 mm. hind wing, 32-34 mm.



Text-fig. 5. (A & B) *Bradinopyga geminata* Rambur, A. fore wing, B. hind wing, (C & D) *Brachythemis contaminata* Fabricius, C. fore wing, D. hind wing.

Remarks: It is not a very common species in Doon Valley. It breeds even in very small bodies of water. One is likely to come across this species on house tops of crowded parts of the city. It is comparatively rare near big streams and ponds.

***Neurothemis fulvia* (Drury)**

1773. *Libellula fulvia* Drury, *Ill. Exot. Ins.* 2: 84-85.

1936. *Neurothemis fulvia*, Fraser, *Fauna Brit. Ind. Odon.* 3: 353-354.

Material: Asarori, 1 ♂; Gula Tappar, 1 ♂; and Timli, 15 ♂♂, 2 ♀♀;

Measurements: Male—Abdomen, 19 mm. fore wing, 25-27 mm. hind wing, 25-27.5 mm. Female—Abdomen, 18 mm. fore wing, 25 mm. hind wing, 25 mm.

Distribution: It is known throughout India, Burma, Thailand and Indochina.

Neurothemis intermedia intermedia (Rambur)

1842. *Libellula intermedia* Rambur, *Ins. Neurop.* p. 91.

1936. *Neurothemis intermedia intermedia*, Fraser, *Fauna Brit. Ind. Odon.* 3: 357-358.

Material: Barkot, 1 ♀; Herbertpur, 2 ♀♀; Haripur, 1 ♀; Jhajra, 6 ♂♂; 1 ♀; Kalsi, 1 ♀; Kuanwala, 1 ♂; Kansrao, 1 ♂, 1 ♀; Motichur, 2 ♂♂, 3 ♀♀; Phanduwala, 1 ♂; Sahastradhara, 1 ♀; and Timli, 1 ♂.

Measurements: Male—Abdomen, 23 mm. fore wing, 30 mm. hind wing, 28.5 mm. Female—Abdomen, 21.5 mm. fore wing, 27 mm. hind wing, 25 mm.

Remarks: It is one of the commonest species.

Neurothemis tullia tullia (Drury)

1773. *Libellula tullia* Drury, *Ill. Exot. Ins.* 2: 85.

1936. *Neurothemis tullia tullia*, Fraser, *Fauna Brit. Ind. Odon.* 3: 360-362.

Material: Sahastradhara, 2 ♂♂; Rishikesh, 1 ♀.

Measurements: Male—Abdomen, 19 mm. fore wing, 24 mm. hind wing, 23 mm. Female—Abdomen, 18 mm. fore wing, 24 mm. hind wing, 23 mm.

Remarks: It differs from the published description in the following features. The labium is yellowish and the membrane is brown. It is the first record of this species from north-west India.

Brachythemis contaminata (Fabricius)

(Text-fig. 5, C & D)

1793. *Libellula contaminata* Fabricius, *Ent. Syst.* 2: 382.

1936. *Brachythemis contaminata*, Fraser, *Fauna Brit. Ind. Odon.* 3: 365-366.

Material: Barkot, 1 ♂; Bhaniawala, 4 ♂♂, 5 ♀♀; Bhoorpur, 1 ♂, Herbertpur, 5 ♂♂; Jasowala, 1 ♂, 1 ♀; Kansrao, 1 ♂; Lachhiwala, 2 ♀♀; Mahant Majri, 5 ♂♂, 5 ♀♀; Rishikesh, 7 ♂♂, 4 ♀♀; Selakuan, 14 ♂♂, 21 ♀♀; Sahastradhara, 3 ♂♂; and Timli, 1 ♂.

Measurements: Male—Abdomen, 17 mm. fore wing, 23 mm. hind wing, 22 mm. Female—Abdomen, 17 mm. fore wing, 23.5 mm. hind wing, 21.5 mm.

Sympetrum commixtum (Selys)1884. *Diplax commixta* Selys, *Ann. Soc. Ent. Belg.* **28**: 38.1936. *Sympetrum commoxitum*, Fraser, *Fauna Brit. Ind. Odon.* **3**: 372-73.*Material*: Sahastradhara, 5 ♂♂, 1 ♀.*Measurements*: Male—Abdomen, 26.5 mm. fore wing, 33 mm. hind wing, 31.5 mm. Female—Abdomen, 25 mm. fore wing, 31 mm. hind wing, 29.5 mm.*Remarks*: A comparatively rare species. It differs from the published description in the following features. The pterostigma is reddish-brown and the membrane is whitish brown.*Distribution*: It is known from north and north-west India.

Subfamily TRITHEMINAE

Trithemis aurora (Burmeister)1839. *Libellula aurora* Burmeister, *Handb. Ent.* **2**: 859.1936. *Trithemis aurora*, Fraser, *Fauna Brit. Ind. Odon.* **3**: 383-385.*Material*: Asarori, 1 ♂; Bhaniawala, 28 ♂♂, 7 ♀♀; Barkot, 3 ♂♂; Chandrabani, 1 ♂; Donga, 1 ♀; Dehra Dun, 1 ♂; Gula Tappar, 5 ♀♀;

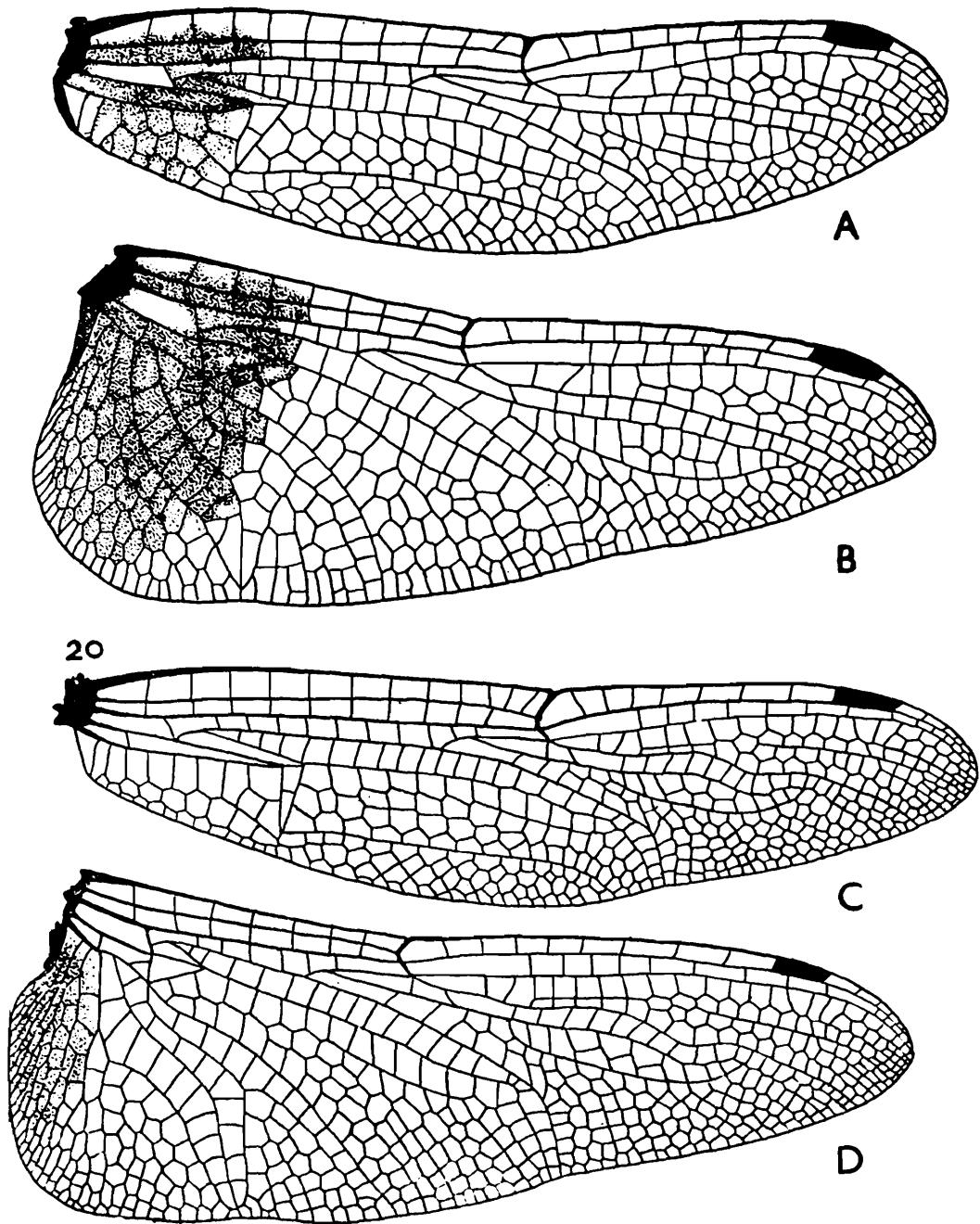
Herbertpur, 4 ♂♂, 8 ♀♀; Jhajra, 1 ♂; Kansrao, 5 ♂♂, 5 ♀♀; Karwapani, 1 ♂; Langha, 1 ♂, 1 ♀; Lachhiwala, 2 ♀♀; Mianwala, 1 ♀; Motichur, 3 ♂♂; Rajpur, 1 ♀; Rishikesh, 31 ♂♂, 6 ♀♀; Sahastradhara, 6 ♂♂, 2 ♀♀; Satnarain, 1 ♂; and Timli, 1 ♂.

Measurements: Male—Abdomen, 20.5 mm. fore wing, 25 mm. hind wing, 24 mm. Female—Abdomen, 21 mm. fore wing, 28 mm, hind wing, 27 mm.*Remarks*: One of the most common species, easily distinguished by its crimson coloured abdomen.**Trithemis kirbyi kirbyi** Selys

(Text-fig. 6, A & B)

1890. *Trithemis aurora* Kirby, *Proc. zool. Soc. Lond.* p. 327.1936. *Trithemis kirby kirbyi*, Fraser, *Fauna Brit. Ind. Odon.* **3**: 365-387.*Material*: Maldevta, 4 ♂♂, 1 ♀; Mianwala, 1 ♀; Mahant Majri, 1 ♀; and Pondha, 1 ♂.*Measurements*: Male—Abdomen, 20 mm. fore wing, 26 mm. hind wing, 24.5 mm. Female—Abdomen, 19 mm. fore wing, 27 mm. hind wing, 25 mm.*Remarks*: The males of this species are very swift fliers and difficult to catch. Both the forms of females described by Fraser (1936) are available in the Doon Valley. The female collected from Maldevta

is of the 'rare' type and those collected from Mahant Majri are of the 'common' type.



Text-fig. 6. (A & B) *Trithemis kirbyi kirby* Selys, A. fore wing, B. hind wing. (C & D) *Pantala flavescens* (Fabricius), C. fore wing, D. hind wing.

***Trithemis festiva* (Rambur)**

1842. *Libellula festiva* Rambur, *Ins. Neurop.* p. 92.

1936. *Trithemis festiva*, Fraser, *Fauna Brit. Ind. Odon.* 3: 387-389.

Material: Asarori, 9 ♂♂; Bhaniawala, 12 ♂♂; Barkot, 1 ♂; Dehra Dun, 1 ♂, 1 ♀; Donga, 21 ♂♂, 6 ♀♀; Doiwala, 2 ♂♂; Gula Tappar, 1 ♂, Herbertpur, 7 ♂♂, 1 ♀; Haripur, 3 ♂♂; Johari, 1 ♂, 1 ♀; Jhajra, 4 ♀♀; Jaintanwala, 12 ♂♂, 1 ♀; Kandholi, 47 ♂♂, 6 ♀♀; Kansrao, 18 ♂♂, 9 ♀♀; Khera, 2 ♂♂, Karwapani, 1 ♂; Kalsi, 2 ♂♂; Lachhiwala, 3 ♂♂; Langha, 18 ♂♂; Mianwala, 2 ♂♂, 1 ♀;

Motichur, 16 ♂♂, 2 ♀♀; Pondha, 3 ♂♂; Raipur, 14 ♂♂; Rishikesh, 4 ♂♂, 2 ♀♀; Robber's Cave, 5 ♂♂, 1 ♀; Ramgarh, 1 ♂, 1 ♀; Rajpur, 27 ♂♂, 3 ♀♀; Sahastradhara, 73 ♂♂, 11 ♀♀; Satnarain, 1 ♂; Sahaspur, 5 ♂♂; and Timli, 1 ♂.

Measurements: Male—Abdomen, 20-22 mm. fore wing, 28-31 mm. hind wing, 26-30 mm. Female—Abdomen, 20-22 mm. fore wing, 28-30 mm. hind wing, 27-29 mm.

Remarks: It is one of the most common species.

***Trithemis pallidinervis* (Kirby)**

1889. *Sympetrum pallidinervis* Kirby, *Trans. zool. Soc. Lond.* **12**: 327.

1936. *Trithemis pallidinervis*, Fraser, *Fauna Brit. Ind. Odon.* **3**: 389-391.

Material: Herbertpur, 1 ♀; Lachhiwala, 4 ♂♂; Raipur, 1 ♂, 1 ♀; and Sahastradhara, 1 ♂.

Measurements: Male—Abdomen, 24 mm. fore wing, 31 mm. hind wing, 30 mm. Female—Abdomen, 23 mm. fore wing, 30 mm. hind wing, 28 mm.

Distribution: It is known throughout India, Sri Lanka, Burma, Philippines and Formosa.

Subfamily ZYGONICTINAE

***Zygonyx torrida isis* Fraser**

1924. *Zygonyx isis* Fraser, *Rec. Ind. Mus.* **26**: 426, 440, 441.

1936. *Zygonyx torrida isis*, Fraser, *Fauna Brit. Ind. Odon.* **3**: 401-402.

Material: Johari, 1 ♀.

Measurements: Female—Abdomen, 39 mm. fore wing, 50 mm. hind wing, 48 mm.

Remarks: A very rare species. It has been recorded for the first time from Uttar Pradesh.

Distribution: It is known from South India, Punjab, and Eastern India.

Subfamily ZYXOMMATINAE

***Zyxomma petiolatum* Rambur**

1842. *Zyxomma petiolatum* Rambur, *Ins. Neurop.* p. 30.

1936. *Zyxomma petiolatum*, Fraser, *Fauna Brit. Ind. Odon.* **3**: 409-410.

Material: Dehra Dun, 1 ♀.

Measurements: Female—Abdomen, 37 mm. fore wing, 34 mm. hind wing, 33 mm.

Remarks: A very rare species.

Distribution: It is known throughout India, Burma, and Sri Lanka,

Subfamily PANTALIINAE

***Pantala flavescens* (Fabricius)**

(Text-fig. 6, C & D)

1798. *Libellula flavescens* Fabricius, *Ent. Syst. Suppl.* p. 285.1936. *Pantala flavescens*, Fraser, *Fauna Brit. Ind. Odon.* 3: 414-416.

Material: Asarori, 2 ♂♂; Bhaniawala, 2 ♂♂, 1 ♀; Donga, 3 ♂♂, 1 ♀; Johari, 4 ♀♀; Kandholi, 1 ♀; Langha, 2 ♀♀; Mianwala, 1 ♂, 5 ♀♀; Dehra Dun, 1 ♂, 1 ♀; Motichur, 1 ♂, 1 ♀; Phanduwala, 1 ♀; Rajpur, 1 ♂, 5 ♀♀; Sahastradhara, 11 ♂♂, 8 ♀♀; Thano, 1 ♂; and Jaintanwala, 1 ♂.

Measurements: Male—Abdomen, 29 mm. fore wing, 40.5 mm. hind wing, 38.5 mm. Female—Abdomen, 27 mm. fore wing, 39 mm. hind wing, 37 mm.

Remarks: A very common species. Swarms of this species are a common sight from July to September. They are often seen resting in large numbers on the bushes.

***Tramea basilaris burmeisteri* Kirby**1839. *Libellula chinensis* Burmeister, *Handb. Ent.* 2: 852.1936. *Tramea basilaris burmeisteri*, Fraser, *Fauna Brit. Ind. Odon.* 3: 432-434.

Material: Mianwala, 1 ♂.

Measurements: Male—Abdomen, 29 mm. fore wing, 39.5 mm. hind wing, 35 mm.

Remarks: A very rare species.

Distribution: It is known from India, Burma, Malaysia and Sri Lanka.

***Tramea virginia* (Rambur)**1773. *Libellula chinensis* De Geer, *Mem. Ins.* 3: 556.1936. *Tramea virginia*, Fraser, *Fauna Brit. Ind. Odon.* 3: 435-436.

Material: Mianwala, 9 ♂♂.

Measurements: Male—Abdomen, 28 mm. fore wing, 40 mm. hind wing, 38-39.5 mm.

Remarks: A rare species. It differs from the published account in being slightly smaller in size. The membrane and pterostigma are brownish.

Distribution: Burma, Thailand, Indo-China, and Formosa.