

### A Note on the Chromosome Numbers of Some Eleusine Species.

N. S. RAU<sup>1</sup> (1929) considered 36 as the probable diploid number in the root-tips of *E. coracana* Gaertn. Avdulov<sup>2</sup> (1931) has determined 18 and 36 to be the diploid numbers in Eleusine and suggests 9 or 10 to be the basic number of the tribe *chlorideæ*. Hunter<sup>3</sup> (1934) confirms the number 36 for *E. coracana* obtained by Avdulov.

The present investigation was taken up to determine the chromosome numbers in some of the local Eleusines. The following species, collected at Coimbatore, were studied:—*E. coracana*, Gaertn.; *E. indica*, Gaertn.; *E. brevifolia*, Br.; *E. ægyptiaca*, Desf. Flower buds were killed between 10-11 A.M. in the following fixatives: Carnoy's, Allan's modification of Bouin's and Fleming's (weak). Sections were cut at 10-12  $\mu$  and stained in hæmatoxylin and also gentian violet iodine.

The haploid chromosome numbers were determined in metaphase plates and at diakinesis as follows:—*E. indica*—9; *E. coracana*—18; *E. brevifolia*—18; and *E. ægyptiaca*—17. Secondary pairing was noticed in the last three species. It is evident that *E. indica* is a diploid, *E. coracana* and *brevifolia* are tetraploids, while *E. ægyptiaca* is probably a tetraploid with one

pair lost ( $4x-2$ ). The basic number is, obviously, 9.

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<sup>1</sup> Rau, N. S., *Indian Jour. Bot.*, 1929, 8, 126.

<sup>2</sup> Avdulov, N. P., *Bull. Appl. Bot. Genet. & Plt. Breeding*, 1931, 43, 428; *Eng. Transl. Summary Imp. Bur. Plt. Genet. School of Agric.*, 633, 1; 576, 312; 576, 16.

<sup>3</sup> Hunter, A. W. S., *Canadian Jour. Research*, 1934, 11, 213.

### Two New Host-Plants of *Loranthus* at Allahabad.

THE partial parasite *Loranthus* commonly grows in the Upper Gangetic plain on a number of host-plants belonging to different families of the Dicotyledoneæ. They are especially found on trees or shrubs, the commonest hosts being *Mangifera indica* and *Bassia latifolia* (Duthie,<sup>1</sup> Brandis<sup>2</sup>).

In January 1935, the author observed this parasite growing on a guava (*Psidium Guayava*) tree, which was an unfamiliar sight. No other plant in the vicinity, but a number of guava trees in an orchard about 2 miles off, had *Loranthus* on them. On looking up the literature on the subject,



Fig. 1. *Loranthus longiflorus* on *Psidium Guayava*.



Fig. 2. *Loranthus* sp. on *Citrus medica* var. *acida*.



Fig. 3. The same as Fig. 2. showing the secondary roots and haustoria of the parasite.

no mention of *Psidium Guayava* as a host of *Loranthus longiflorus* was found.

A knob was, as usual, formed at the junction of the parasite and the host (Fig. 1). The parasite produced a number of branches with glabrous and somewhat leathery leaves. Flowers and fruits were present. The parasite was *Loranthus longiflorus* Desr. which is the commonest species in the United Provinces.

*Psidium Guayava* is a non-indigenous plant of the family Myrtaceæ with bark composed of dry membranous layers but now it is naturalised throughout India (Hooker<sup>3</sup>).

Scott<sup>4</sup> and Bidie<sup>5</sup> are of opinion that plants having deciduous bark with dry membranous layers are unfavourable hosts of this parasite.

Fischer<sup>6</sup> dissents from the above view and has mentioned in his list, a number of plants attacked regularly by the parasite, which have similar characters of the bark, but very few plants of the family Myrtaceæ, especially the non-indigenous genera, are recorded by him as host-plants.

Patwardhan<sup>7</sup> noted *Eucalyptus rostra*, a non-indigenous plant as a host of *Loranthus longiflorus* in Poona. Kamerling<sup>8</sup> mentions *Loranthus dichrous*, a species not found in India, on *Psidium Guayava* in Brazil.

Later on, sometime in the middle of February, the parasite was seen growing on another new host-plant, viz., *Citrus medica* var. *acida* (Fig. 2). The primary root was not seen at that stage. A number of secondary roots were seen arising at the point of infection which was the junction of the host and parasite. A knob-like structure was formed at this point. These roots grew outwards and spread over the surface of the host-plant, coiling round in every direction and sending out the haustoria into the tissues of the host to absorb the necessary nourishment (Fig. 3). The roots vary in size and length with age. Some of these were fairly thick and brown with a number of lenticles on them, others were thin and green in colour, with conical growing tips. From these spreading roots, erect branches bearing a number of foliage leaves were developed. By means of these secondary roots the infection is spread over the surface of the host-plant. These roots were not sensitive to gravity as they seemed to be going up or down the branch indiscriminately. The bark of the host-plant was fairly thick.

Fischer<sup>6</sup> in his list mentions *Citrus medica* as a host for *Loranthus neelgherrensis* and another species (not named) of *Citrus* attacked by *Loranthus elasticus* in Southern India. Both of these species of the parasite are not found in Northern India.

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<sup>1</sup> Duthie, J. F., *Flora of the Upper Gangetic Plain*, 1915.

<sup>2</sup> Brandis, D., *Indian Trees*, 1907.

<sup>3</sup> Hooker, J. D., *Flora of British India*, 1897.

<sup>4</sup> Scott, G. J., *J. Agri. and Hort. Soc. of India*, 1817, 2, Part I.

<sup>5</sup> Bidie, *Report on the Nilgiri loranthaceous parasitical plants destructive to forest and fruit trees*, 1874.

<sup>6</sup> Fischer, C. E. C., *Rec. Bot. Survey of India*, 1926, 11, No. 1.

<sup>7</sup> Patwardhan, C. B., *J. Indian Bot. Soc.*, 1924, 25, 4.

<sup>8</sup> Kamerling, Z., *Ber. deutsch. bot. Ges.*, 1914, 32, 17 (quoted in MacGregor Skene—*The Biology of Flowering Plants*, 1924, 228).

#### A Note on a Comparative Study of the Chromosomes in Ten Species of Indian Dragonflies.

LEFEVRE AND MCGILL<sup>1</sup> as co-workers (1908), Smith<sup>2</sup> (1916) and Oguma<sup>3</sup> (1930) are the only authors who so far have devoted their attention to the chromosome studies in this very ancient family of insects. In a paper published by Oguma and Asana<sup>4</sup> (1932) attention was drawn to a very interesting observation, whose significance is not yet quite clear, that the so-called *m*-chromosome (the smallest among the autosomes) presents every grade of size reduction among the testicular cells of a single individual belonging to a species of *Odonata*, *Tramea chinensis*, collected in the vicinity of the Gujarat College, Ahmedabad, Western India.

This rather remarkable observation led us to make a comparative study of the chromosomes in the male germ cells of some ten species of Indian dragonflies so far collected, from a very restricted area situated in the neighbourhood of the Ismail College, Jogeshwari, about 20 miles north of Bombay. The following observations are based on the species listed below.

May we take this opportunity to express our thanks to Colonel F. C. Frazer who very