A NOTE, ON THE KARYOTYPIC VARIABILITY IN *CROCOTHEMIS ERYTHRAEA* (BRULLÉ) AND *C. SERVILIA* (DRURY) (ANISOPTERA: LIBELLULIDAE)

During August-November, 1973 we have examined the karyotypes of two adult males from Kurukshetra, India, pertaining to these two taxonomically still insufficiently understood taxa (cf. e.g. F. RIS, 1911, *Collns zool. Selys Longchamps* 13: 529-700; — 1921, *Ann. sth Afr. Mus.* 17: 145-452). The haematoxylin stained preparations (cf. J.S. YADAV, 1972, *Nucleus* 15: 57-64) clearly show karyotypic distinctions between the two taxa, though the chromosome numbers are equal (2n ♂ = 25, n ♂ = 13, *m*).

Among the spermatogonial metaphase elements of *erythraea* there is a pair of distinctly larger chromosomes, whereas the

others, save for the *m*'s, are gradually decreasing in magnitude. At the same stage of *servilia* there is but little size variation among the elements other than the *m*'s. At the *erythraea* diakinesis a single chiasma occurs per bivalent, while the chiasma frequency is significantly higher in *servilia*. In *erythraea* the size of the metaphase I *m*-bivalent is approximately half that of the X, whereas the *m* and X are similar in size in the corresponding figures of *servilia*.

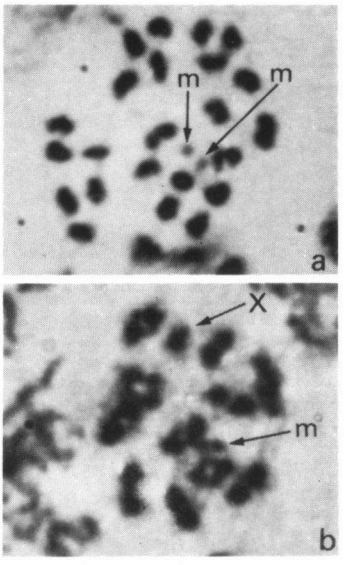

Fig. 1. Male germ cell chromosomes of *Crocothemis erythraea* (Brullé), Kurukshetra, India (haematoxylin squash, 1500x): (a) spermatogonial metaphase; — (b) prometaphase I.

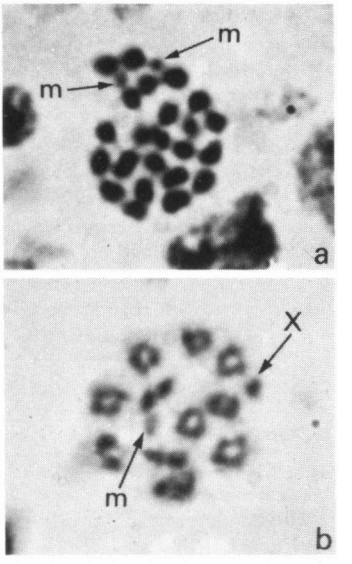

Fig. 2. Male germ cell chromosomes of *Crocothemis servilia* (Drury), Kurukshetra, India (haematoxylin squash, 1500x): (a) spermatogonial metaphase; — (b) prometaphase I.

These observations are only partly in agreement with the evidence on the two taxa from other populations.

Thus, a slightly larger bivalent was reported in *erythraea* from Italy (B. KIAUTA, 1971, *Atti Mus. civ. Stor. nat. Trieste* 27: 65-127), but not so from Uttar Pradesh, India (J. DASGUPTA, 1957, *Proc. zool. Soc. Calcutta* 10: 1-66), Kenya (B. KIAUTA, 1969, *Arnoldia, Rhod.* 4/15: 1-8) and from the South African Republic (J.M. VAN BRINK & B. KIAUTA, 1977, *Abstr. Pap. 4th int. Symp. Odonatol., Gainesville*, pp. 18-19). In *servilia*, on the other hand, as in the Kurukshetra material, no distinctly large autosome pair occurs in the populations from Bombay, India (J.J. ASANA & S. MAKINO, 1935, *J. Fac. Sci. Hokkaido Univ.*, VI, 4: 67-86) and from Calcutta (S.P. RAY CHAUDHURI & J. DAS GUPTA, 1949, *Proc. zool. Soc. Bengal* 2: 81-93), while this feature has not been reported from Nepal (B. KIAUTA, 1975, *Cytotaxonomy of dragonflies, with reference to the Nepalese fauna*, Nepal Res. Cent., Kathmandu).

An increase in chiasma frequency, not found in the Kurukshetra material, was reported for *erythraea* from Uttar Pradesh (DASGUPTA, 1957, cf. above) and from Italy (KIAUTA, 1971, cf. above), but unlike in our *servilia*, no increase of the recombination index was noticed in material from Calcutta (RAY CHAUDHURI & DAS GUPTA, 1949,

cf. above).

At metaphase I of *erythraea* the *m* is distinctly smaller than the X, as in our material, also in Uttar Pradesh (DASGUPTA, 1957, cf. above), while the two are approximately equal in size in the two Italian populations studied (KIAUTA, 1971, cf. above). In *servilia* these are similar in size, as in Kurukshetra, also in Calcutta (RAY CHAUDHURI & DAS GUPTA, 1949, cf. above), but not so in material from Bombay (ASANA & MAKINO, 1935, cf. above) and in that from Nepal (KIAUTA, 1975, cf. above).

A special feature of the Japanese *servilia*, studied by T. OMURA (1955, *Biol. J. Okayama Univ.* 3: 1-86), is a secondary reduction of the chromosome number, involving the fusion of the original X, and resulting in a male haploid number of 12 and a neo-XY sex determination.

As is apparent from the above, the karyotypic morphology of the two taxa is not of much help in the clarification of their taxonomic status, though more systematic studies of a larger number of geographic populations and the application of statistics could perhaps disclose some geographic patterns in the distribution of some of the karyotypic features.

The specimens were identified by Dr. S.K. Sangal, D.A.V. College, Dehra Dun, while the preparations and micrographs were made by Miss Rekha Kaushik and Shri R.K. Pillai respectively.

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