The specimen was brought to the Department of Zoology from nearby locality of Bhopal. Two complete tails, identical in structure are attached to the base of mesosoma (Figs. 1 and 2). There could not be found any significant difference between the two tails except the tail of the left side is slightly thicker than that of the right side. The segments of the right tail are dorsally concave and ventrally convex with longitudinal ridges and its ventral side is somewhat concave. Correspondingly the right sting is pointed upwards and left downwards.

On careful examination of the specimen there could not be found any other abnormality, except the twin tails. The morphological details of the specimen remain the same as that of a mature normal scorpion.

FIGS. 1 and 2.

As the embryology of this specimen is not studied, no definite explanation for the development of the twin tails could be putforth. However, it is assumed that the cell which initiates the tail formation was split into two equal parts and each part then grew into a fully formed tail.

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September 5, 1975.

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KARYOTYPE OF THE SANDFLY *PHLEBOTOMUS PAPATASI*

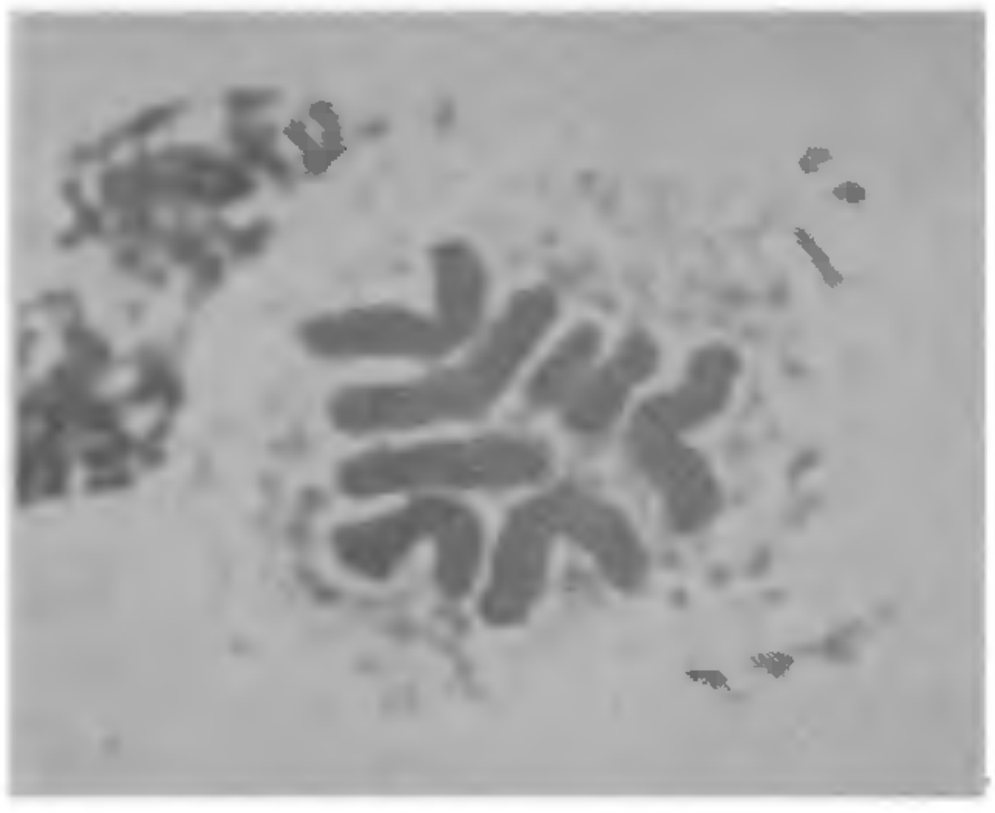
SANDFLIES form an important group of vectors of many human diseases. Over 500 species of sandflies of the family Phlebotomidae are known from various parts of the world. Though there are many reports of the studies on ecology, general biology and vector potentiality of sandflies, very little is known about their cytology. In fact, the only published report on this subject is that of the karyotype of *Phlebotomus longipalpis* (*Lutzomyia longipalpis*)[1]. The present communication reports the karyotype of another species of sandfly *Phlebotomus papatasi*.

Fully grown 4th instar larvae from the laboratory colony of *P. papatasi* were used for chromosome preparations. They were immersed in 0·1% colchicine solution for about 4 hours. Following colchicine treatment, the head of the larva was separated from the rest of the body and stained for 10 minutes in lacto-aceto-orecin stain (85% lactic acid, 50 ml; acetic acid glacial, 50 ml; orecin, 2 gm). The whole head after staining, was squashed in 45% acetic acid on a slide. The brain tissue could thus be easily seen. The edges of the coverslip were sealed with nail-polish and the preparations were studied under microscope. A total of 35 larvae were processed, 23 individually and the rest in batches of 2–3. Metaphase plates were obtained from 6 out of 23 larvae processed individually, in addition to those observed from larvae processed in batches.

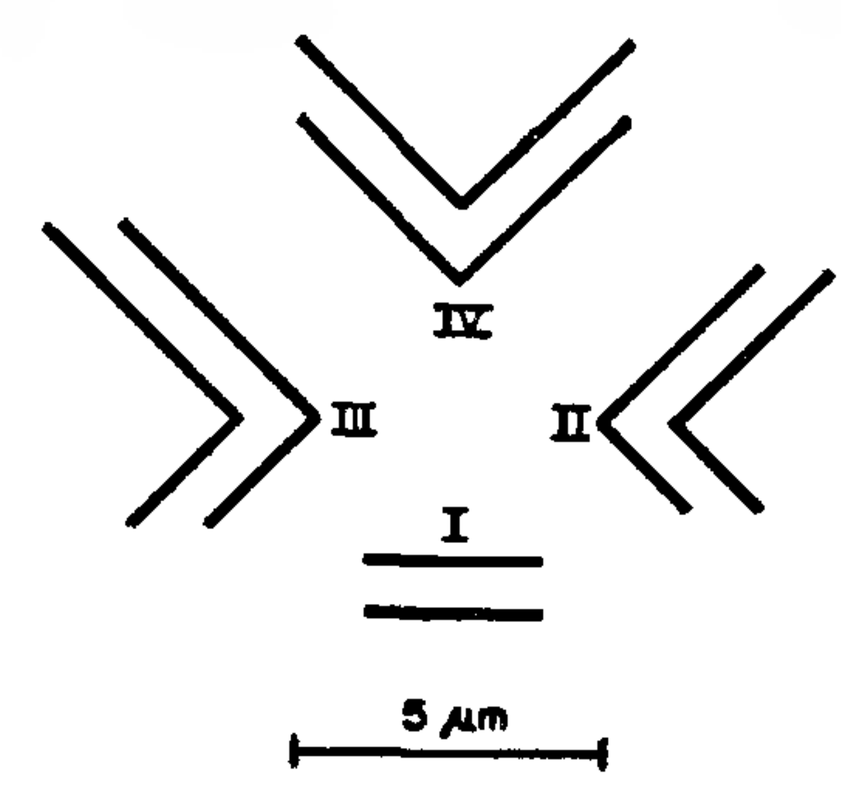
The karyotype of *P. papatasi* consists of 4 pairs of chromosomes ($2n = 8$) (Figs. 1–2). The chromosomes are numbered from I to IV according to the system followed in case of mosquitoes[2]. The shortest chromosome is designated as chromosome I, the longest as IV and the intermediate ones as II and III. Of these, chromosome I is acrocentric, chromosomes II and III submetacentric, and chromosome IV metacentric. The relative length of different chromosomes and their arms, from one of the metaphase plates, are as follows: chromosome I—2·8 μm, chromosome II—5·6 μm (3·6 + 2·0 μm), chromosome III—7·0 μm (4·5 + 2·5 μm) and chromosome IV—7·6 μm (3·8 + 3·8 μm). Sexual dimorphism in karyotype could not be detected in any of the metaphase plates studied.

Carvalho[1], reported for the first time, the karyotype of the sandfly *P. longipalpis*, which also had 4 pairs of chromosomes. Of these, one was acrocentric (chromosome I) and the remaining three were metacentric (chromosomes II, III and IV) pairs. Whereas, in *P. papatasi*, as it has been observed during the present study, there is one

acrocentric pair (chromosome I) and one metacentric pair (chromosome IV) and the other two submetacentric pairs (chromosomes II and III). It is thus evident that the karyotypes of these two species of sandflies, one from the new world (*P. longipalpis*) and the other from the old world (*P. papatasi*) differ considerably.



1



2

FIGS. 1–2. Fig. 1. Metaphase chromosomes of *Phlebotomus papatasi*, × 1,500. Fig. 2. Diagrammatic representation of the karyotype of *Phlebotomus papatasi*.

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KARYOTYPES OF THREE SPECIES OF MOSQUITOES FROM INDIA

CYTOGENETICS of mosquitoes has received much attention in recent years in an attempt to understand the genetic basis of insecticide resistance and genetic control. Even though more than 2400 species of mosquitoes are known to science so far, various cytogenetic studies have been conducted on less than 100[1-4]. Kitzmiller[2] emphasized the need for standardized karyotype studies in additional species of mosquitoes to obtain data on heterosomes and relative arm length of mitotic chromosomes. The purpose of this communication is to report the karyotypes of three species of mosquitoes from India, *viz.*, *Aedes* (*Stegomyia*) *novalbopictus* Barraud, *Aedes* (*Stegomyia*) *subalbopictus* Barraud and *Toxorhynchites splendens* (Wiedemann).

Brain tissues from the 4th instar larvae were employed to study the somatic chromosomes. Larvae of *A. novalbopictus* and *A. subalbopictus* were from approximately 35 and 5 laboratory generations respectively, whereas larvae of *T. splendens* were collected from the field (Khandala, Maharashtra State) and were reared in the laboratory up to 4th instar. The techniques employed for chromosome preparations were essentially the same as described by French *et al.*[5]. From each species 25–30 individual larval brain preparations were studied. For chromosome measurements the procedure used by Rai[6], was followed. They were numbered according to McDonald and Rai[7].

The diploid chromosome number was 6 in all 3 species (Figs. 1–3). Typical of mosquitoes, chromosome were arranged in 3 pairs. Occasionally (0·1–0·2% of the dividing cells) cells with polyploid chromosomes were also observed in all the 3 species. Somatic pairing of homologous chromosomes was frequent and was intimate at the centromere region. Sexual dimorphism in the chromosome complement was not detected in any of the species studied. The measurements of metaphase chromosomes and the ratio of the length of chromosome I to chromosomes II and III are given in Table.

All the chromosomes from 3 species of mosquitoes were metacentric. The ratio of length of chromosome I to chromosomes II and III in *A. novalbopictus* and *A. subalbopictus* was comparable to that of the other members of the genus *Aedes* thus far studied[6,8,9]. The ratio obtained for *T. splendens* was closer to that of members of the genus *Aedes* than to members of the genera *Culex* and *Anopheles*. Both in *A. novalbopictus* and *A. subalbopictus* there was a considerable difference in length between chromosomes II and III (6–7% of the total length