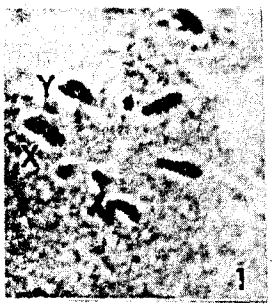
Nirmala Sajjan, S. and N.B. Krishnamurthy
University of Mysore, India. Report on two new species of Drosophila from Mysore.

The genus Drosophila is a large diverse group with world wide distribution. The total size of the genus must be at least 2000 species (Stone et al. 1960). Two new species reported here for the first time belong to the immigrans group of species, as evidenced by the presence of a row of cuneiform bristles on the first femur, horn about one half the length of puparium, ventral receptacle short with about twenty-five loosely arranged coils and a sperm pump with two twisted posterior diverticula. These flies were collected from coconut and arecanut grooves of Mysore. Sympatric with these two species, are found D. melar-



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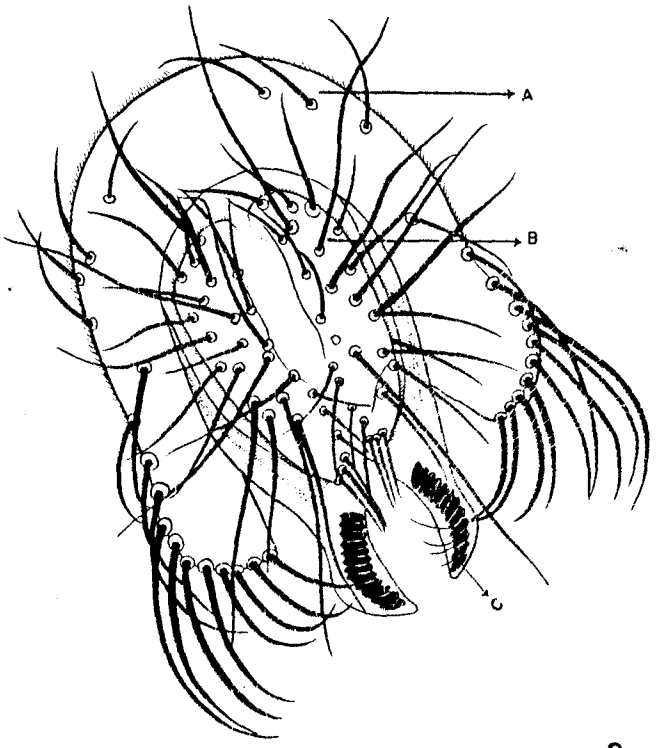

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Fig. 1. Metaphase plate of D. neonasuta ♂
Fig. 2. Salivary gland chromosomes of D. neonasuta

Fig. 3. Periphallic organs of D. chamundiensis ♂ A - Genital arch; B - Anal plate; C - Primary clasper

kotliana, D. bipectinata, D. nasuta (Lamb), D. jambulina, D. mysorensis, D. rajasekari and D. brindavani.

Of the two new species, one is named here as Drosophila neonasuta. This species belongs to the nasuta subgroup of the immigrans group of species. The males of D. neonasuta lack tarsal ornamentation and have silver-whitish frons characteristic feature of the nasuta subgroup. Morphologically it resembles D. sulfurigaster, D. pulaua and D. nixifrons in having whitish silvery bands along the frontal orbits. In other characters, it is similar to that of D. nasuta (Lamb) redescribed by Okada (1964). However this species differs cytologically from all other members (with whitish silvery orbits) of the nasuta subgroup described by Wilson et al. (1969). The karyotype of this species (Fig. 1) consists of a pair of V's, a pair of double length rods, a pair of dots and a pair of rods in the females, while one of the rods is replaced by a J-shaped Y chromosome in the males. A small amount of heterochromatin is

added to the dot chromosomes making them slightly thicker and longer than the basic dots. The salivary gland chromosomes (Fig. 2) exhibit 4 long arms and one short arm as in the other members of the nasuta subgroup. Wilson et al. (1969) have pointed out that nasuta subgroup is characterized by marked divergent evolution. Further a large range of water and distance isolates the population understudy from the populations studied by Wilson et al. (1969). The additional parameter of cytological differences noted for this species is in support of our qualifying the present species as a new species - Drosophila neonasuta.

The other species collected at the base of Chamundi Hills of Mysore for the first time, is a new species as identified by Okada (1971, personal communication) and named by the authors as Drosophila chamundiensis after its locality of collection. The flies are fairly large in size and somewhat dark brownish in colour. Sex comb is absent in males. Acrostichal hairs are slightly irregular in 8 rows. Periphallic organs (Fig. 3) differ from all other members of immigrans group. The egg has four long and tapering egg filaments. The metaphase karyotype revealed the presence of a pair of V's, a pair of dots and two pairs of rods in females while one of the rods of one pair is replaced by a J-shaped Y chromosome in males. There are four long arms and a short arm in the salivary gland nuclei. Based on these observations, this has been given the status of a new species - Drosophila chamundiensis.

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References: Okada, T. 1964 in Nature and Life in Southeast Asia, Vol. III, Ed. T. Kira and T. Umesao; Stone, W.S., W.C. Guest and F.D. Wilson 1960 Proc. Nat. Acad. Sci. USA 46: 350-361; Wilson, F.D., M.R. Wheeler, M. Harget and M. Kambysellis 1969 Univ. Tex. Publ. No. 6918:207-254.

Lucas, K.U. and G.F. Sprague, Jr. Yale University, New Haven, Connecticut. Glycogen synthetase activity in adipose males.

Histological observations (Doane, 1960) coupled with total carbohydrate determinations (Doane, 1963) have suggested that the adipose mutant of D. melanogaster may metabolize carbohydrate abnormally. Furthermore, we have found that when extracted with either water or hot 30% KOH, adipose flies yield about 1/3 the wild-type level of glycogen. In an attempt to locate the biochemical lesion more precisely, we are investigating the enzymology of glycogen metabolism in these flies. This note reports preliminary measurements of glycogen synthetase activity.

For use in these experiments, wild-type (Oregon-R) and homozygous adp^{60} flies (in an Oregon-R background) were reared axenically on standard corn meal-molasses medium, containing 30 mg/ml brewer's yeast. Newly emerged adult males were aged 7 days in the presence of excess brewer's yeast before being assayed. Glycogen synthetase activity was measured in whole-fly homogenates and low speed (1000g, 15 min) supernatant fractions by the method of Villar-Palasi et al. 1966. The data below show a 30-40 fold difference in the ability of males of the two strains to incorporate radioactive glucose (supplied in the form of ^{14}C-UDPG) into ethanol-precipitable material.

Genotype		μmoles glucose incorporated/mg protein-min (x 10^4)
+/+	Homogenate	6.4 ± 1.6
	Supernatant fraction	11.3 ± 2.4
adp^{60}/adp^{60}	Homogenate	.14 ± .02
	Supernatant fraction	.46 ± .27

Since measurements made on crude preparations such as ours reflect net, rather than absolute, rates of glycogen synthesis, we are currently investigating the effect which polysaccharide degradative enzymes may have in this system, as well as continuing our analysis of glycogen synthetase.

References: Doane, W.W. 1960 J. Exp. Zool. 145:1; _____ 1963 DIS 37:73; Villar-Palasi, C, M. Rosell-Perez, S. Hazukuri and J. Larner 1966 in S.P. Colowick and N.O. Kaplan, Methods in Enzymology, Col. VIII, Academic Press, N.Y. p. 374.