

of PAS-positive material, most of which is saliva resistant, but a part of it is saliva soluble. The cytoplasm of these cells also take the aniline blue stain when stained with Mallory azan. Evidently, these cells contain glycogen and mucopolysaccharides.

The chorio-allantoic placenta of *Hipposideros fulvus fulvus* shows the presence of numerous trophoblastic giant cells during advanced pregnancy. These trophoblastic giant cells (Fig. 5) are enlarged cells of the cytotrophoblast with one to three vesicular nuclei each containing a prominent large nucleolus and flakes of chromatin. The cytoplasm appears to be granular and shows the presence of rich deposits of saliva soluble PAS-positive material (Fig. 6). Most of these giant cells lie close to the interstitial membrane of the placental tubules near the deciduo-placental border. Giant cells are however not noticed near the foetal border of the placenta. Clusters of giant cells are often located near large maternal vascular channels surrounded otherwise by trophoblast.

Although the origin of the giant cells varies in the two bats studied here, the staining reaction and the fact that they ultimately lie abutting against the trophoblast suggest that the giant cells in both *Rousettus leschenaulti* and *Hipposideros fulvus fulvus* are in some way involved in the transport of glycogen and mucopolysaccharides across the placental barrier particularly during advanced stages of gestation.

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CHROMOSOMAL DYNAMICS IN THE SOUTH INDIAN PALM SQUIRREL *FUNAMBULUS PALMARUM PALMARUM* LINN. (RODENTIA : SCIURIDAE)

FAMILY Sciuridae includes squirrels, marmots, woodchucks, chipmunks and prairie dogs. Karyological survey has been made on the North American and a few Asian sciurids¹⁻⁵. Among Sciuridae, the evolution of the karyotype and cytotaxonomy of the genus *Spermophilus* is well known⁶. Cytological information on the Indian sciurids is very meagre.

Two species of the genus *Funambulus*, namely, *pennanti* and *palmarum* are of common occurrence in India. Chromosomes and sex chromatin of the North Indian five-striped squirrel, *F. pennanti* have been studied⁷⁻⁹. As there was no cytological

information on the South Indian members of Sciuridae, the authors undertook to analyze the karyotypes of the available species and to establish cytotaxonomic links among various genera of this group.

This report embodies the results carried out on twenty-five individuals (14♂, 11♀) of the congeneric species, *Funambulus palmarum palmarum*, a three-striped squirrel, collected in the environs of Manasa Gangotri campus and the Zoological Gardens, Mysore. The bone marrow, spleen and gonadal tissues have been used for chromosomal preparations applying the colchicine, hypotonic, air-dry technique. The diploid number is 46 with a NF of 66¹⁰. The 'standard karyotype' includes 2 pairs of metacentric, 9 pairs of submetacentric and 11 pairs of acrocentric chromosomes. The X and Y are both submetacentric. Regarding the size, the X approximately falls between the 7th and 8th pairs and the Y between the 8th and 9th pairs of submetacentric chromosomes (Fig. 1). Further, a pair of small acrocentrics have identifiable satellites (Fig. 1, pair 20). Satellite chromosomes have also been observed in an American squirrel, *Spermophilopsis leptodactylus*¹¹ and the North Indian five-striped squirrel *F. pennanti*⁹. Occurrence of a pair of sat-chromosomes in both the species of *Funambulus* appears to be an important karyological character which may throw light on their cytotaxonomical nearness.

Curiously, in two individuals collected in Manasa Gangotri campus, two variable karyotypes are encountered (Table I). In one case there are 12

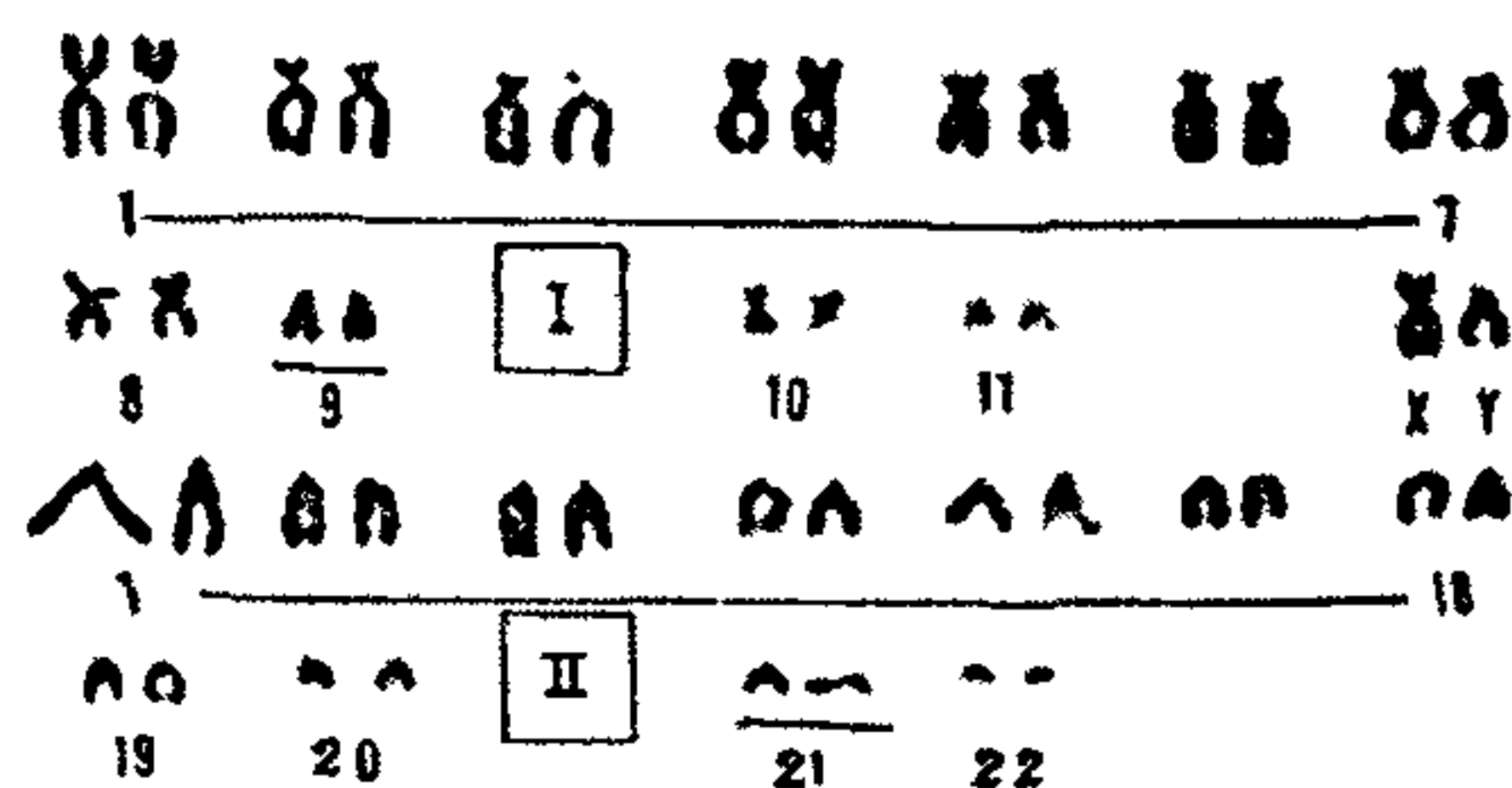


FIG. 1. Standard karyotype with $2n = 46$ and $NF = 66$. Chromosomes underlined are involved in pericentric inversions which fit in the blocks I and II in the Variants I and II respectively.

pairs of biarmed and 10 pairs of acrocentrics (NF, 68) and in the other, the biarmed pairs are 10 and the acrocentric pairs are 12 (NF, 64). Thus, in these individuals there is an inverse relationship between the biarmed and acrocentric

TABLE I

Karyotype	2n	Meta-centric pairs	Submeta-centric pairs	Acro-centric pairs	Total biamed pairs	X	Y	NF
Standard	46	2	9	11	11	sm	sm	66
Variant I	46	2	10	10	12	sm	sm	68
Variant II	46	2	8	12	10	sm	sm	66

chromosomes without change in the diploid number ($2n=46$). The increase or decrease in the fundamental number (NF) in these two individuals appears to be due to pericentric inversions. In the variant with NF=68, the 21st pair (acrocentric) of the standard karyotype is assumed to have changed to a biamed pair which fits in between 9th and 10th pairs (Fig. 1, Block I) and in the other variant with NF=64, the 9th pair (submetacentric) is converted into an acrocentric pair which falls between 20th and 21st pairs (Fig. 1, Block II). Such structural changes in the karyotype is of great significance because they are symptomatic of possible changes that the chromosomes could undergo without reproductive impairment. These could be floating chromosomal changes without any evolutionary significance but they signify the possible trends.

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MASS MORTALITY OF *LINGULA ANATINA* (LAM.) (BRACHIOPODA) IN PORTO NOVO WATERS, S. INDIA

Lingula anatina (Brachiopoda), the burrowing form inhabiting bottom muds is found from the mouth of the Vellar to the five fathom line in Porto Novo waters ($29^{\circ} 11' N$; $49^{\circ} 72' E$). During the recent shore collections after the storm on 23rd November and again on 6th December, 1972, thousands of *L. anatina*, along with the tubiculous polychaete *Onuphis* sp., were found washed ashore for a mile in stretch in the intertidal area (Fig. 1) and most of them were fresh and healthy. The shore crab *Ocypoda macrocera* were found feeding on these dead specimens. Bottom samples collected from different depths contained only dead *Lingula*. The nature of the water was turbid and the surface water temperature, salinity, pH and oxygen values were $27.0^{\circ} C$, 14.5% , 8.3 and 4.2 ml O_2/l respectively. The bottom salinity and oxygen values as drawn from previous year's data ranges from 14.6 to 15.2% and 4.2 to 4.5 ml O_2/l respectively. Phytoplankton and zooplankton collections were made and they were found to be exceptionally poor in the area.

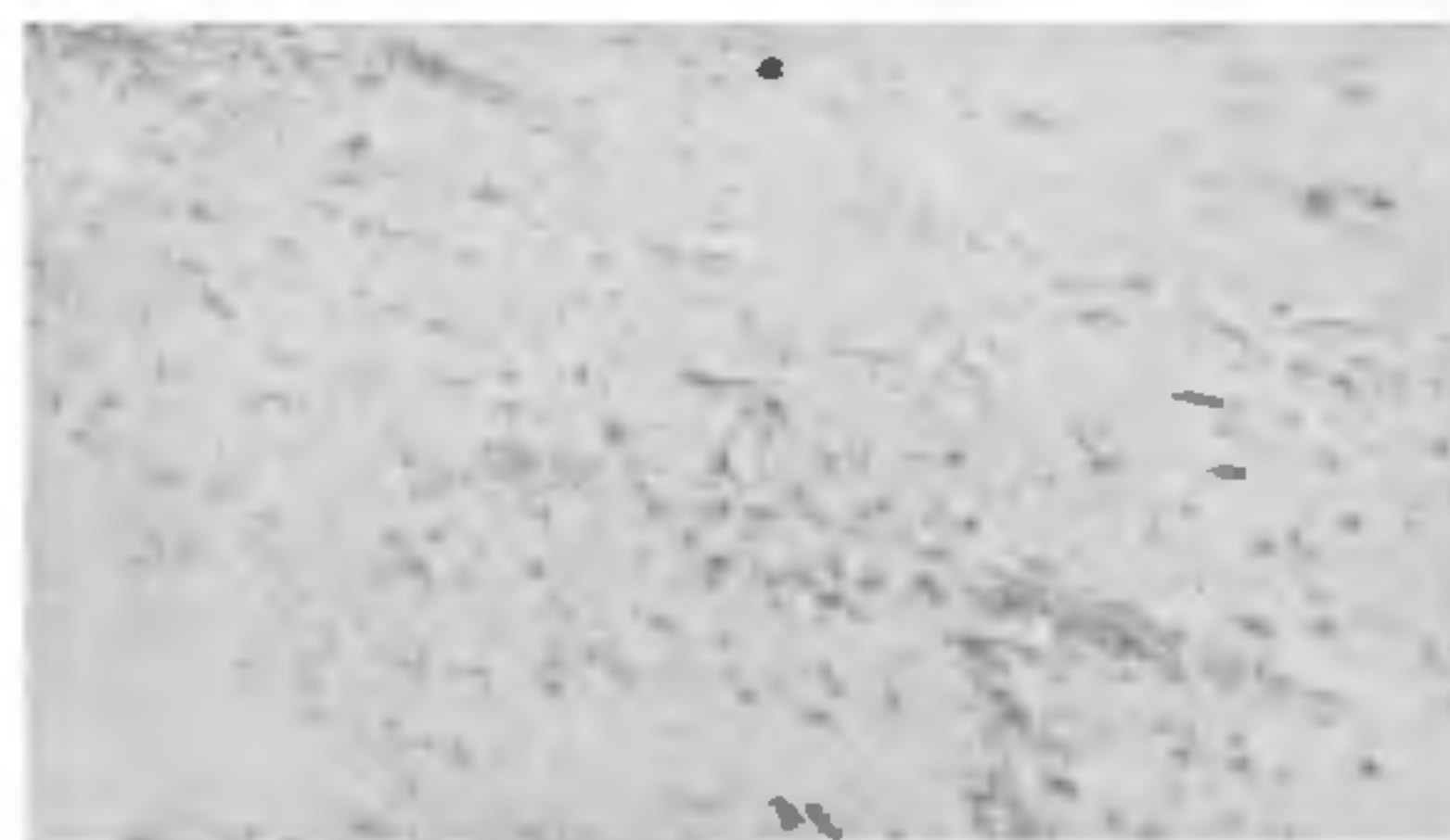


FIG. 1. Showing the mass mortality of *Lingula anatina* in the intertidal region.

The causes for the mass mortality among marine organisms are varied. Most of the Indian workers have attributed the noxious phytoplankton bloom as one of the reasons for the mortality of fishes. Such a phenomenon was never before noted in the case of *Lingula*. Two possible reasons may be given for the present mass *Lingula* mortality, viz., low salinity and cyclonic storms.

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