GREAT INDIAN RHINOCEROS INHABITED GUJARAT

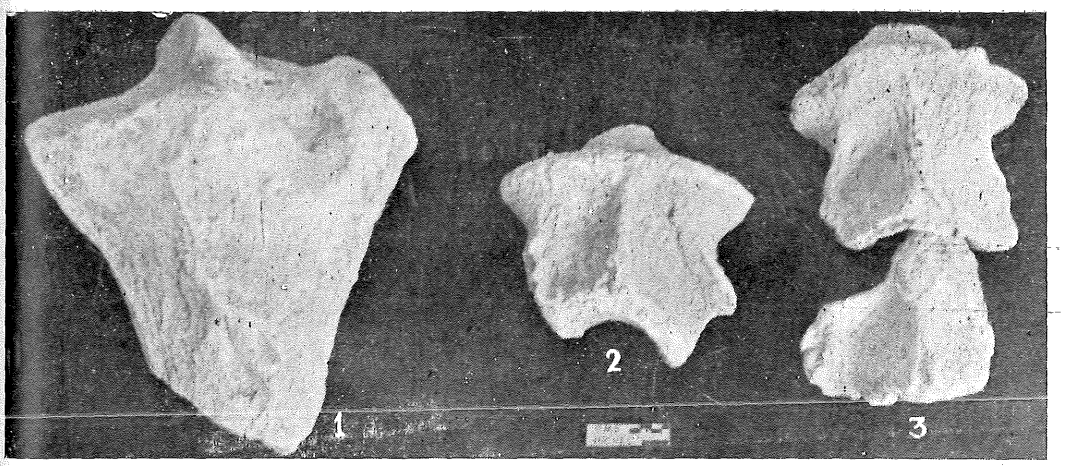
THE Great Indian Rhinoceros—*Rhinoceros unicornis* Linnaeus, 1758, at the moment threatened with extinction in India, inhabited Gujarat, in the period of 8000 B.C. to 1200 B.C. Sankalia and Karve (1949) and Zeuner (1952, 1963) reported the occurrence of the rhino in the Microlithic site at Langhnaj in N. Gujarat. Presence of this animal has also been reported by Nath (1963) from Lothal, a famous chalcolithic site.

IUCN's (1967) *Survival Service Commission Red Data Book* records its former distribution as follows : "Five hundred years ago the Indian rhino ranged over a large part of northern India and Nepal. The westerly boundaries of its range were the foothills of the Hindu Kush west of Peshawar and the bush country south along the Indus River ; the northern limit was the frontier of Kashmir. The boundary presumably then went south-eastward along the foothills of the Himalayas, through the Terai to the Burmese border. The southerly limit is uncertain, although arid conditions presumably limited its southern extension in much of India.... If the Great Indian Rhinoceros ever inhabited Burma, its range by the late 1800's was probably limited to the areas adjoining Assam and Bengal.... Reports of its occurrence in Cambodia, Laos, Viet Nam and Thailand are questionable."

BENGAL including 165 from Chitawan in *Nepal*. In any case, the present distribution of the Indian Rhino is restricted to Indian 'reserves' or sanctuaries, the Rapti Valley region of the Nepal Terai and a little way up the Brahmaputra river from the Assamese Kaziranga Sanctuary.

The explorations carried out by K. N. Momin of the Department of Archaeology and Ancient History of the Maharaja Sayajirao University of Baroda, during the year 1972–73, in Bhalbara (Cambay Taluka) in Kaira District of Gujarat State have revealed many sites of late Stone Age and Chalcolithic period. Most of the late Stone Age sites were discovered around Kaneval (formed by the sand dunes) a large, natural lake covering an area of about 11 km. Kaneval is situated at a distance of 20 km on the north-west of Cambay.

Along with the Microlithic tools and pottery, several semifossilized bones were collected which included two pieces of cervical vertebrae (Fig. 3) of the rhino from Khaksar, situated on the southern side of Kaneval lake. Another rhino cervical vertebra (Fig. 2) was collected from Valotri village, 8 km on the north of Tarapur on the Anand-Cambay railway line. The finds from these two sites included the Chalcolithic pottery and the Microlithic tools as well. The proximal end of tibia (Fig. 1) of rhion was collected from the



FIGS. 1–3. Fig. 1. Proximal end of Tibia showing two cut marks, from northern side of Kaneval lake. Fig. 2. Ventral view of Axis (Cervical Vertebra) from Valotri. Fig. 3. Ventral view of Axis and the other Cervical Vertebra, from Khaksar.

1966 population, for its estimated numbers, totals 740 from Kaziranga, Laonhowa, Kukurata, Raja Mayang, Orang, Sonarupa, Manas and elsewhere in ASSAM and Jaldapara, Gorumara in WEST

Chalcolithic mound situated on the northern side of Kaneval lake. Along the median condyle of tibia, there are certain deep cut marks which indicate that it might have been used as an anvil

or for any other purpose. These evidences indicate that the Great Indian Rhinoceros existed in the swampy, grassy and wooded forest areas of Gujarat, in the period of C. 8000 B.C. to 1200 B.C.

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CYTOLOGICAL STUDIES IN *MYRIOPHYLLUM OLIGANTHUM* (HALORAGACEAE)

PREVIOUS cytological work pertaining to the genus *Myriophyllum* is confined to a few temperate species, mainly dealing with the chromosome counts[1-4]. A perusal of the literature indicates that there is no cytological information for *M. oliganthum* (W. & A.) F.V.M. The present contribution deals with the karyotype and meiosis in this species.

Material was collected from a pond near Bannerghatta (Mysore State). For the study of somatic chromosomes, root tip squash preparations were made following Tjio and Levan's technique[5]. For meiotic studies, young flower buds were fixed in acetic-alcohol (1 : 3) for 24 hours and the anthers were then squashed in acetocarmine.

The somatic chromosome number is 14. Measurements of the chromosomes are given in Table I. The chromosomes are relatively small, varying in length from 2·45 μ to 3·15 μ. They do not show marked differences in size. There are 5 pairs of chromosomes with median centromeres, the largest pair bearing satellites on the short arms. The other 2 pairs in the complement possess submedian centromeres (Figs. 1 and 2). The karyotype is symmetrical.

Meiosis is fairly normal. In each pollen mother cell 7 bivalents are observed at diakinesis and metaphase I. One bivalent is invariably associated with the nucleolus during diakinesis (Fig. 3).

The basic number for the genus *Myriophyllum* is 7. The species that have been investigated so far form an euploid series, representing diploid,

TABLE I

Measurements of somatic chromosomes of Myriophyllum oliganthum

Chrom. pairs	L. arm in μ	S. arm in μ	Total length in μ	Relative length (%)	Arm ratio (L. arm/S. arm)
1	1·75	1·05+0·35	3·15	16·29	1·25, 0·3 (SAT)
2	2·10	1·05	3·15	16·29	2·00
3	1·75	1·05	2·80	14·47	1·66
4	1·75	1·05	2·80	14·47	1·66
5	1·49	1·05	2·54	13·14	1·41
6	1·40	1·05	2·45	12·67	1·33
7	1·58	0·87	2·45	12·67	1·80