

*RHINOCEROS SONDAICUS* DESMAREST FROM THE  
HOABINHIAN OF GUA CHA ROCK SHELTER, KELANTAN

by

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A few years ago, through the courtesy of Mr. C. A. Gibson-Hill of the then Raffles Museum, Singapore, and of Dr. F. C. Fraser of the British Museum (Natural History), London, I received for study rhinoceros teeth found at Gua Cha rock shelter, Kelantan, Federation of Malaya. This material, excavated under the direction of Mr. and Mrs. G. de G. Sieveking (Sieveking, 1954-1955, 1955), originates from the Hoabinhian level below the Neolithic river sands, and represents the first record of the lesser one-horned rhinoceros from the Mesolithic of Malaya. Only upper teeth were sent, representing four individuals, as follows:

Individual A (subadult): right DM<sup>3</sup> (incomplete), right and left DM<sup>3</sup> (much worn), left P<sup>2-4</sup> (unerupted and unworn, but enamel calcified except at base of P<sup>3</sup>), right M<sup>1</sup> (ectoloph missing), and right M<sup>2</sup> (portion of protoloph only, unworn).

Individual B (young adult): right P<sup>2-4</sup>, and right and left M<sup>1-3</sup>. Superb specimen, with weak cristae in the premolars, and a duplicated crochet in the right M<sup>1-2</sup>.

Individual C (aged): right P<sup>3</sup> (incomplete), left P<sup>4</sup>-M<sup>3</sup>, and right M<sup>3</sup>

Individual D (aged): right M<sup>1-3</sup>, also fragments of P<sup>3</sup>.

Prehistoric and fossil material of rhinoceroses from the Malay Archipelago and India have been described in detail in a previous publication (Hooijer, 1946). All the comparative data mentioned in the present report are derived from this source.

The Gua Cha molars differ from those of *Rhinoceros unicornis* L. in being less hypsodont, in the shape of the ectoloph, which is sinuate in its course (prominent paracone style, outer surface behind this style concave, posterior half more inclined inward than anterior half, but with raised metastyle) instead of being approximately straight as in *Rh. unicornis*, in the absence of a protocone fold, in the less backward extension of the internal portion of the protoloph, and in the absence of full cristae in the molars. Although the Indian rhinoceros has never been found to occur in Malaya this species should not be left out of account here since it has a Pleistocene subspecies in Java (*Rh. unicornis kendengindicus* Dubois).

On the other hand, the Gua Cha dentitions resemble closely those of *Dicerorhinus sumatrensis* (Fischer) as well as *Rhinoceros sondaicus* Desmarest, species that are known to occur, or that until very recently did occur in Malaya. With well-preserved upper premolars and molars such as those of Gua Cha a specific determination is possible. The Gua Cha teeth differ from those of *D. suma-*

*trensis* and agree perfectly with those of *Rh. sondaicus* in the absence of a protocone fold, in the postsinus being decidedly less deep than the medisinus, and in the posterior basal width of  $M^1$  and  $M^2$  being less relative to the anterior basal width than in *D. sumatrensis* (Table 1).

TABLE 1  
Width ratios of upper molars of *Rh. sondaicus* and *D. sumatrensis*

		<i>Rh. sondaicus</i>	Gua Cha	<i>D. sumatrensis</i>
$M^1$	post. width ant. width	0.85-0.94	0.88-0.90	0.91-0.96
$M^2$	post. width ant. width	0.79-0.91	0.82-0.84	0.88-0.94

I have further compared the dimensions of the Gua Cha teeth with those of subfossil Sumatran cave material and with Pleistocene teeth of *Rh. sondaicus* from Java. In general, the Pleistocene and the prehistoric teeth show an excess in average size over their recent homologues. As is evident from Table 2 the variation ranges of the dimensions of the rhinoceros teeth overlap to a considerable extent. The Gua Cha milk molar ( $DM^3$ ) is slightly larger than the recent  $DM^3$  from Java and Sumatra, and it is as large as its subfossil counterpart from Sumatra. The permanent teeth ( $P^2$ - $M^3$ ) are within the limits of size of those of recent *sondaicus*, and except for one  $P^2$  (individual A) that is rather smaller, they are all in the broad zone of overlap of dimensions of the recent and the Pleistocene teeth.

TABLE 2  
Tooth measurements of *Rhinoceros sondaicus* (in mm)

	Gua Cha Individuals								Subfossil		Pleistocene (Java)	
	A		B		C		D		Recent	(Sumatra)		
	l.	r.	l.	r.	l.	r.	l.	r.				
$DM^3$	ant. w.	46	47	—	—	—	—	—	—	40-44	43-46	42
	post. w.	40	42	—	—	—	—	—	—	35-41	40-43	ca. 37-39
$P^2$	ant. w.	38	—	—	42	—	—	—	—	34-44	37	39-45
	post. w.	40	—	—	43	—	—	—	—	39-44	40	41-45
$P^3$	ant. w.	—	—	—	49	—	—	—	—	47-57	—	48-57
	post. w.	47	—	—	48	—	—	—	—	45-51	—	ca. 45-53
$P^4$	ant. w.	50	—	—	55	57	—	—	—	51-60	51-52	51-62
	post. w.	—	—	—	51	53	—	—	—	47-54	ca. 48	48-59
$M^1$	ant. w.	—	—	57	58	58	—	—	57	51-60	—	54-65
	post. w.	—	—	51	51	52	—	—	51	45-52	—	49-56
$M^2$	ant. w.	—	—	57	58	60	—	—	60	53-60	57-64	55-62
	post. w.	—	—	48	48	49	—	—	49	45-52	44-51	47-54
$M^3$	ant. w.	—	—	54	53	51	51	—	—	43-55	57	48-56
	length outer surface	—	—	52	53	52	52	—	—	44-58	58	50-62

- HOOIJER, D. A., 1946. Prehistoric and fossil rhinoceroses from the Malay Archipelago and India. *Zool. Med. Museum Leiden* 26: 1-138.  
 SIEVEKING, G. DE G., 1954-1955. Excavations at Gua Cha. *Federation Mus. Journ.* 1-2: 75-158.  
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