ON THE STATUS OF *SIVAPITHECUS INDICUS* MATERIAL FROM THE LOWER SIWALIKS OF KANGRA DISTRICT, H.P.

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GUPTA[4] recovered a mammalian jaw fragment containing last premolar and first molar and an isolated last premolar 'from the rocks referred to as Nurpur Zone which is equivalent to the Chinji Zone of the Lower Siwaliks' and exposed near Bandal (32° 01′ 38″ : 76° 14′ 11″) in Kangra district, Himachal Pradesh. He assigned them to a hominoid primate '*Sivapithecus indicus*' Pilgrim. Pandey and Sastri[6] have earlier described a *new* species of *Sivapithecus* Pilgrim on the basis of a broken right ramus collected from a site near Bandal and tentatively assigned by them to Nagri (Sarmatian) age.

While engaged in comparative studies of the Indian fossil primates, the authors of the present note on a closer examination of Gupta's[4] photographs and the material found that the two specimens belong to a suid and not to a primate. The continued reference to these specimens as primates in various publications[2,3,5] makes it necessary to put the record straight. Our belief that the specimens belong to a suid and not to a primate is based on our observations as follows :

The squarish outline of the premolar and molar in the jaw and of the isolated premolar clearly indicate that they belong to the maxilla and not to the mandible. This is also clear from the disposition of the cusps on the premolar crowns which are set in a triangular fashion with the lingual cusp forming the apex and the antero-labial and postero-labial cusps forming the buccally facing base (see Fig. 1). Both the specimens are apparently of the right side.

(A) The sketch of the maxillary fragment containing M^1 and P^4 is depicted in Fig. I. M^1 is slightly larger in its antero-posterior (a.p. = 16·75 mm) than transverse (tr. = 15·75 mm) diameter[4]. Cusp pattern is not hominoid at all. Besides presenting a typically bunoid structure of four prominent cusps, the occlusal surface has two accessory cusps: one, situated in the deep and broad median valley and the second, placed antero-medially between paracone and metacone. A moderately developed and beaded cingulum surrounds the anterior (mesial) aspect of the crown, while a prominent posterior cingulum is present on the posterior (distal) aspect. The wear is moderate and the perforations on the main cusps indicate a thick enamal The presence of accessory cuspules in the median valley along the auntero-medial aspect of the tooth is a typical suid feature.

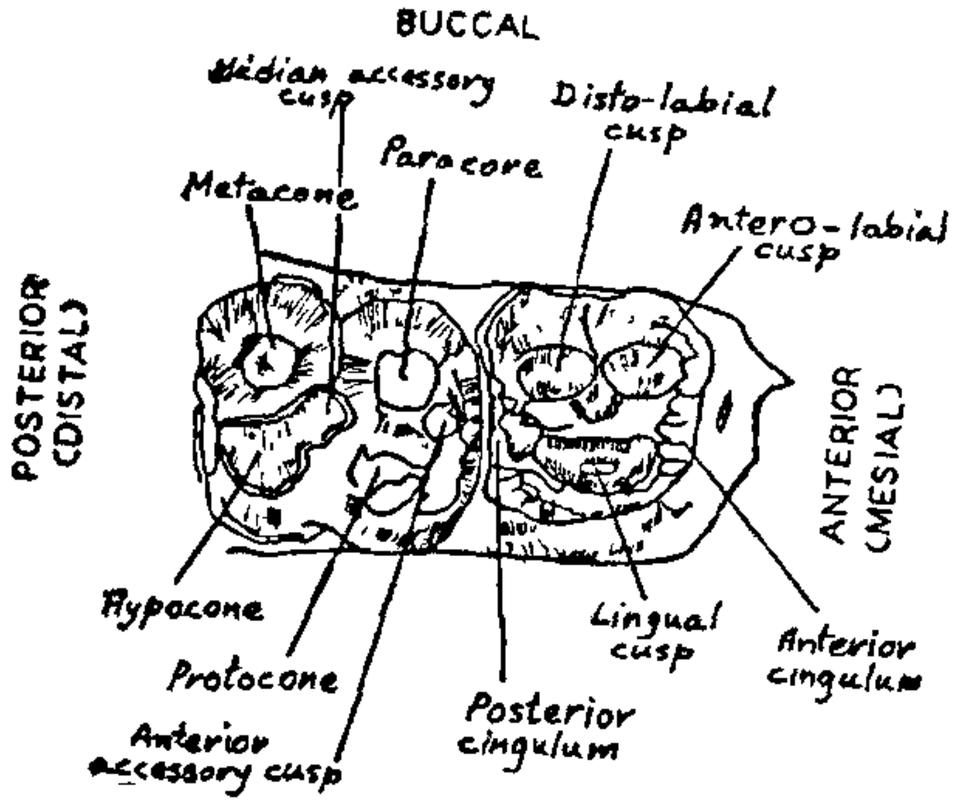

FIG. 1. Occlusal view of the upper right jaw fragment with M^1 and P^4.

P^4 is broader than longer (a.p. = 12·00 mm ; tr. = 14·00 mm)[4] and bears a molariform pattern of the crown. The manner of wear is similar to that found in suids, particularly belonging to the genus *Dicoryphochoerus*. The presence of cingular shelves on the anterior (mesial) and posterior (distal) borders further lends support to this observation.

The crown structure of the two teeth is closely similar to that of the corresponding teeth in the right maxilla (Ind. Mus. B. 706) referred to *Dicoryphochoerus titan* (Lydekker) by Pilgrim[8] (Pl. XIII ; Fig. 1).

(B) The isolated right upper premolar shows morphological details which are similar to the premolar in the mandibular fragment described above. It is, however, larger (a.p. = 13·00 mm; tr. 15·00 mm)[4] and considerably worn.

As is evident from Table I reproduced from Gupta[4], the metrical comparison of the teeth in the jaw fragment with that of *Sivapithecus indicus* (Ind. Mus. D. 177)[7] from the Chinjis, attempted by him, appears incongruous. The a.p. and tr. diameters in the two instances are not comparable ; the similarity of the length/breadth indices can at best be attributed to shear chance particularly because all other evidences do not support it.

Identification

The above mentioned observations on the fossil material reported by Gupta[4], indicate its close resemblance to the two Siwalik suid genera, namely, *Dicoryphochoerus* and *Propotamochoerus*. However, relationship to *Propotamochoerus* seems minimal in view of the following important features of the upper last premolars :

(i) generally more complex crown structure ;
(ii) anterior and posterior cingula stronger ;

TABLE I

	M^1			P^4		
	a.p.	tr.	Index	a.p.	tr.	Index
Ind. Mus. D. 177 (Pilgrim[7])	11·5 mm	10·6 mm	92·1	8·5 mm	9·9 mm	116·5
Bandal specimens (Gupta[4]) (A)	16·75 m	15·75 mm	92·28	12·00 mm	14·00 mm	117·50
(B)	..	..	..	13·00 mm	15·00 mm	115·40

(iii) outer (buccal) cusp more deeply cleft ; and
(iv) single inner (lingual) cusp well pronounced.

Keeping in view these observations and the relative abundance of *Dicoryphochoerus* in the Chinjis[1,8], it seems quite genuine to assign the two specimens to the genus *Dicoryphochoerus*. However, because the specimens are fragmentary, identification at the specific level does not seem justified.

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CERTAIN VIEWPOINTS ON THE RENAMING OF CYANOPHYTA

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THE recent renaming of blue-green algae as Cyanobacteria[1] and the recommendations to place the nomenclature under the International Code of Nomenclature of Bacteria[2] unfortunately do not appear quite acceptable. Primarily the non-consideration of the most vital characteristics of the blue-greens such as oxygen evolving photosystem, pigment composition and above all their wide range of morphological diversity leaves one reticent to accept the above recommendations. Moreover, an arduous task has been set, to evolve (axenic) culture types, probably the beginning of a never ending battle. Though the dates and deadlines announced to have culture types have elapsed the practicability of the problem appears intricate. Strong and valid objections to Stanier *et al.* recommendations by Lewin[3], Bourrelly[4] and Golubic[5] have necessitated a complete review of the situation.

Evolving culture types to all representative genera of blue-green algae does not appear practically so easy. Blue-greens are capable of refraining to expose all their morphological characteristics of 'their habitat' when put into the artificially prepared culture medium. One instance is the difficulty that has been experienced to bring into culture *Trichodesmium*, a marine planktonic form that forms extensive blooms[6]. The behaviour of helical members of blue-greens under laboratory conditions is yet another. Nevertheless, even if with great difficulties one brings the blue-greens into culture the stability of the culture is not definite. It is likely that a culture may become questionable at a later date. In fact a coccoid blue-green culture obtained by Stainier himself at different times is known to have changed itself, over the years[7]. Since cloning is involved with purification of an organism, fortuitous isolation of a mutant might cause enough of confusion and variable results might be interpreted with the same organism. Another important problem will be to bring into culture some of the thermophilic and cryo-blue-greens. Here one has to necessarily use media that ought to be different from that used for other common forms. This could lead on to a collection of blue-greens in a varying set-up.

Blue-green algae are unique in their possession of oxygen evolving photosystem which is a great step in the evolution of the plant kingdom. This is one major point in which they differ from the bacteria. The phycobiliproteins of red and blue-green algae have been much studied than those of Cryptophytes. The similarities of the three groups (in this feature) are greater than differences. Basic similarities are common to all groups including their aminoacid sequence from the NH_2 terminus. Glazer and Apell[8] have concluded that three algal groups have a closer phylogenetic relationship than had previously been assumed. Nutritionally, most blue-green algae are quite fastudious in exhibiting 'photoautotrophic' mode of nutrition with few exceptions where valid 'heterotrophy' has been documented. Such exceptions are probably met with in other classes of algae as well. The range of morphological structures found among blue-green algae show a close parellelism encountered so clearly