In the terms of this study, a tooth is only considered to be fresh or unworn before it has fully erupted and come into contact with its occlusal partner(s). Once wear has commences, it does not take long for the relatively thin enamel on one cusp to be eroded until a point of dentine is visible (see Butler and Mills, 1959 and Simons and Pilbeam, 1972, on enamel thickness). With continuing wear, the exposed dentine enlarges to a circular region which increases in diameter, roughly centered on the original cusp apex. Eventually, because of the locally varying enamel thickness and tooth topography, the wear facet enlarges asymmetrically toward the midline of the tooth. In almost all individuals, the less tall cusp of a pair on one loph(id) will wear first, and in all cases it is the mesial loph(id) which is first affected. The resulting wear facet may merge with its partner along a narrow line while the taller cusp is in early wear, in a flask shape after the taller cusp shows a circular dentine patch, or even by the meeting of two asymmetrical wear facets. The diagonal pair composed of the taller mesial and shorter distal cusps wear at approximately the same rate in a population, but not necessarily in each individual. Upper teeth wear in a pattern buccolingually opposed to the lowers, due to their mirror-image reversal.

Thus, in a typical lower molar, the enamel of the protoconid is abraded to expose a point of dentine soon after functional occlusion is attained. This wear facet

enlarges to a circle, and point wear occurs on the metaconid and/or hypoconid. As the metalophid wear facets begin to merge or to increase asymmetrically, the entoconid develops point wear. In an M_3, point wear of the hypoconulid is the last to occur. The metalophid wear facet then widens to a broad oval, while that on the hypolophid increases, and eventually the protoconid and hypoconid facets merge along the buccal margin. Finally, after a stage with two broad ovals, the whole occlusal surface of the tooth is a dentine lake, with enamel covering only the margins and perhaps part of the talonid basin; the last landmark to remain enamel-covered is the median lingual notch. As the margins crack and wear down, the tooth becomes nearly useless for mastication.

This basic pattern appears to hold for all cercopithecids, despite differences in diet and morphology. The wear of upper molariform teeth is as described for lowers, with substitution of buccal for lingual cusps. The premolars (except P_3) wear as does the mesial loph(id) of molars; there is little wear on the P_3 talonid until late in life, when relief is lowered to allow contacts. The teeth wear in an order similar to that of eruption (see Schultz, 1935): M1, M2/P4, P3/M3, depending also on sex and whether upper or lower.

A detailed analysis of tooth wear in a toothrow can help to estimate age and trace more complex wear features. It may also serve to link isolated teeth with partial dentitions, or uppers to lowers, and thus estimate more

closely the number of individuals represented. In order to compare dental wear more accurately, a system of scoring was devised in which each of several wear stages per cusp was summed over the tooth; the scores were then divided into groups, to limit the number of possible stages considered. No rank was assigned to the toothrow as a whole, for this was felt unnecessary, given the purposes noted above; correlation of wear by score or group between upper and lower serial homologues or toothrows has not yet been completed.

The system employed for scoring teeth and illustration of its use is presented in figure 25, which is self-contained. The six wear stages for a given tooth, ranked A through F with increasing wear, have been used above in graphing lengths of teeth against width, in order to reveal the small but present difference in size between average worn or unworn teeth. The construction of cercopithecid cheek teeth, with termini of greatest length well apical from the cervix, means that length will be changed by wear more rapidly than if greatest length were cervical, and thus little affected by early wear. The problem of interstitial wear has not been considered in detail here, nor have wear gradients in any detail, but length reduction is apparent with larger samples, and especially obvious on individual strongly worn teeth (classes E and F)(see also Wolpoff, 1971). Jolly (1972) has attempted to estimate unworn length in fossil populations of Theropithecus species, but this was not tried

Figure 25

Cercopithecid Cheek-tooth Wear and its Grading

Seven forms of wear are recognized and scored:

Name	Score	Shape
Fresh, unworn (no dentine)	0	
Point wear	1	·
Circular (exposure of dentine)	2	o
Asymmetrical	3	▷
Narrow flask (across loph(id))	5	⊃
Wide flask (across loph(id))	7	⊂⊃
Oval (across loph(id))	8	⊂⊃

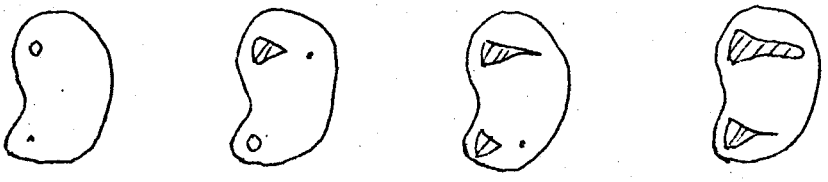
The tooth as a whole is then graded by summing scores:

Wear Grade	Range of possible Scores in P3-4	dP3-M3
A	0	0
B	1-2	1-5
C	3-5	6-9
D	6-7	10-13
E	8	14-16
F	Breakdown of margins or notchs, contact of ovals	
X	Indicates wear not given or noted	

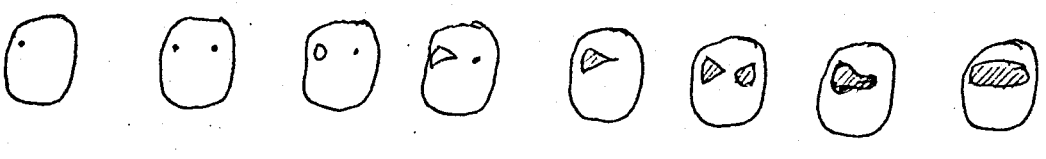
Wear in a left lower molar might typically progress as in top line, next page; scores and grades given below sketch. Middle line indicates another possible sequence, in which wear is very strong buccally. Bottom line suggest wear stages and scoring/grading in left P_4. Note right upper equivalent teeth would appear very similar. Diagonal shading indicates areas of exposed dentine; clear areas enamel-covered.

Figure 25

4	8	12	16		Score
B	C	D	E	F	Grade



3	6	9	12		Score
B	C	C	D		Grade



1	2	3	4	5	6	7	8	Score
B	B	C	C	C	D	D	E	Grade

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