tions were not identical. Therefore, the correct way to examine the data is to compare the mean replicative life-spans after adjusting for age. This was accomplished by analysis of covariance (*4*).

The first step was to determine if the relation between age and mean total population doublings differed among the three populations. In other words, were the slopes of the linear regression lines significantly different. The results indicated that they were not ($P = .4$), thus making it possible to combine the three groups and to calculate a common regression line which had a slope significantly different from zero ($P = .0003$).

After noting the significant decline in mean total population doublings with age, we tested to see if, as the predisposition to diabetes mellitus increased, the age-adjusted mean total population doublings decreased. This was accomplished by testing for the statistical significance of the linear contrast among the adjusted means. Since we are testing the hypothesis that the fibroblast life-spans for diabetics < prediabetics < normals, a single-tailed *t*-test was used. The results indicated that the fibroblast replicative life-span did decline with increasing predisposition to diabetes ($P = .04$). Although these studies need corroboration by other investigators using larger sample sizes, they do provide sufficient evidence to indicate that this phenomenon warrants further consideration.

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21 July 1978

Carnivoran Jaw Shape

In a discussion of the evolution of New World dogs, Olsen and Olsen (*1*), note that the "turned-back" apex of the mandibular coronoid process, which results in an "overhang" of bone along the caudal or back edge of the coronoid process, is a diagnostic feature of domesticated dogs (*Canis familiaris*). They state that dogs have this feature, whereas other canids generally do not. They also state that the turned-back coronoid process of domestic dogs and the Chinese wolf (*Canis lupus chanco*) may indicate that these forms were "omnivorous" carnivorans, rather than strict meat eaters. Their notion that the shape of the carnivoran coronoid process is an indicator of diet is based on the following observation: "In the true 'meat eating' carnivores, such as cats (*Felidae*), there was no overhang in this area. The apex [referring to the coronoid process] was terminated in a symmetrically rounded crest. The same was true of the badgers and otters (*Taxidea* and *Lutra*, respectively). However, there was a noticeable overhang, similar to that in dogs, in carnivores with an omnivorous diet, as in bears (*Ursidae*)" (*1*, p. 535).

The notion that the turned-back coronoid process of carnivorans is a reliable indicator of an omnivorous diet is incorrect. Although ursids may have a turned-back coronoid process, not all ursids are omnivorous. The giant panda (*Ailuropoda melanoleuca*), thought by many to be an ursid (*2, 3*), has a diet that consists primarily of bamboo shoots (*4*), whereas the polar bear (*Thalarctos maritimus*) has a diet that consists almost entirely of fish and seals (*5*); yet both have turned-back coronoid processes (*2*) (Fig. 1). Moreover, other highly carnivorous carnivorans have turned-back coronoid processes. For example, jaguars (*Felis onca*), as figured in Olsen's monograph (*6*), and hyenas (*Crocuta crocuta*) (*7*) have turned-back coronoid processes. Thus, although domesticated dogs have both a turned-back coronoid process and an omnivorous diet, the presence of this morphological feature among carnivorans does not necessarily indicate an omnivorous diet.

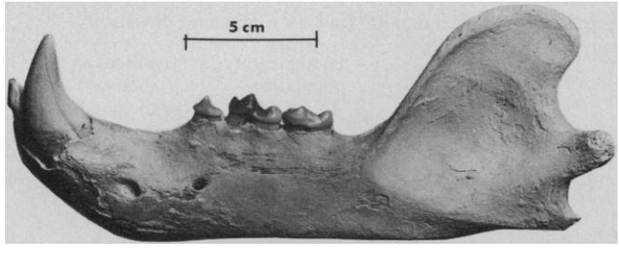

Fig. 1. Photograph of the lateral view of the polar bear (*Thalarctos maritimus*) mandible. [From Osteology Collection, Department of Anatomy, Duke University]

It should also be noted that the temporalis, masseter, and medial and lateral pterygoid muscles do not "all have their insertion on the coronoid process to one degree or another" (*1*, p. 535), as Olsen and Olsen state. In carnivorans, only the temporalis and the zygomaticomandibularis muscles insert along the coronoid process. The masseter and medial pterygoid muscles insert into, or in the region of, the angular process of the mandible; and the lateral pterygoid muscle inserts along the medial aspect of the condylar process (*8*).

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23 August 1977

Although Hylander quoted, in part, a few of our observations regarding the overhang of the coronoid apex, he did not continue with our published statement: "The evidence suggests that more investigation is needed to determine the use and function of the overhang and the relation to diet or subsistence strategy."

Hylander does not give any explanation as to why this process varies. His photograph of *Thalarctos* depicts the entire ascending ramus with a "backward" deflection rather than just the coronoid apex as we presented it. This, in the polar bears, is also a variable condition. In carnivores, in general, no single character in a single individual is diagnostic, as most vertebrate osteologists will agree.

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