This collection of papers deals with the long and relatively uninter-
rupted stratigraphic sequence in the Anza-Borrego Desert of southern
California. It is a very readable account of the significance of an area that
has produced a remarkable record of animals and plants over a five and
one-half million-year interval (from about 6 million to about a half mil-
lion years ago). The Anza-Borrego area has a sequence of sedimentary
rocks measuring more than 5,500 m (17,000 ft) in thickness with few
significant breaks. The Plio-Pleistocene sequence in the Vallecito Creek-
Fish Creek Basin (VCFCB) is about 4300 m (13,975 ft) spanning about 3.5
million years. This record is unparalleled in North America and, because
of the relatively continuous sequence that now has paleomagnetic age
control, has become the best place to examine the boundaries among
three of the North American Land Mammal Ages. This book contains 20
chapters, an appendix consisting of five tables, a glossary, an excellent
reference list and an index.

The introduction gives an excellent outline of the book with a brief
statement on the subject matter of each chapter thus allowing for easy
access to topics of interest. It points out that technical terms are used
throughout but they are well defined either as they are used or in the
glossary. Chapter 1 is a history of investigations in the Anza-Borrego
area from the earliest geologist’s observations in 1853 to the recent met-
iculous plotting of localities on aerial photos by T. Downs. Chapters 2
and 3 describe the marine units of late Miocene and early Pliocene age
and their invertebrate and sparse vertebrate fossils. The upper De-
guynos Formation has produced a few fragments of an extinct walrus and
dolphins. It is pointed out that the presence of a walrus in this obviously
warm environment suggests that the evolution of the cold adapted
modern walrus is fairly recent. The invertebrate fauna (beautifully
illustrated in Chapter 3) was very diverse (Table 2 of the Appendix)
and many species have close living relatives only in the Caribbean. This
fauna predates the rise of the Panamanian Isthmus. The reduction in
diversity from the clear water environments of the Latrania Formation
to the mudier environments of the Deguynos Formation is noted but
the degree of change and the taxa involved are not. A table showing the
distribution of the various taxa in the two formations would be
helpful here. Chapter 4 describes the plant fossils that are abundant in
some units. Fossil wood is abundant and the basis of the interpretation of
this material is informative. Fossil plants include reworked pollen along
with protozoans from the Cretaceous Mancos Shale and indicates that
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Chapters 8–17 describe the vertebrate fossils that are found in the
sediments of the sequence. These accounts are not exhaustive but give a
good idea of the history of each group as recorded in the Anza-Borrego
sequence. Fish, amphibians, reptiles, birds and mammals are all present
(Chapter 8). Key characters are given for most groups and environmental
interpretations are given for many. The bird fauna (Chapter 9) indicates
much more mesic conditions than present.

The peculiar osteology of xenarthrans is well described in Chapter 10.
The dates of arrival of the various species of sloths in the Anza-Borrego
area are related to the phases of the “Great American Interchange,”
which is discussed in more detail in Chapter 19. The carnivores are
described in Chapters 11 and 12. The roster of the larger species is what
would be expected. There is a discussion of the absence of the hunting
hyena, Chasmaporithetes, which is found in Sonora, Mexico. However,
there is no mention of the absence from the Anza-Borrego sequence of
another contemporaneous large carnivore, the scimitar cat Homoth-
eryum, which is known from Irvington, California. There is a considerable
diversity of smaller carnivores including the Blancan otter, Satherium, as
well as the extant otter, Lontra. This section has an excellent discussion
of the habitats of the small carnivores and environmental inferences.
Proboscideans (Chapter 13) are represented by four taxa, Gomphoth-
eryum, Stegomastodon, Mammuthus meridionalis and Mammuthus columbi. The characters that McDaniel uses to separate the two species of
Mammuthus are well illustrated but there is no discussion of the
implications of the coexistence of two species of Mammuthus in the
Anza-Borrego deposits. The discussion of the taphonomy of the skeleton
of Mammuthus meridionalis points out the information obtainable from
a detailed analysis of the orientation and condition of the bones. The
suggestion that Borophagus was involved in modifying the bones is con-
troverted by the non-overlap in time of the two taxa in the Anza-Borrego
sequence or anywhere else in North America.

The small mammals (bats, insectivores, rabbits and rodents) are
summarized briefly in Chapter 14. These animals have been used
extensively for both biostatigraphic and paleo-environmental work and
their importance in these areas is emphasized. A more comprehensive
account of these groups in the Anza-Borrego sequence would require a
volume larger than the present one. Horses and tapirs are described in
Chapter 15. Scott gives an excellent account of both the post-cranial
and dental anatomy of the horses as well as the difficulties in differentiating
species. He recognizes six taxa of horses from the Anza-Borrego but
gives the stratigraphic distribution of only three (Fig. 15.3). Scott points
out that modern species of wild horses show very little overlap in their
distributions. This is very different from the situation in the Plio-
Pleistocene of North America where several species consistently coex-
isted.

The smaller artiodactyls (peccaries, oxen, deer and pronghorns) are
well represented in the fauna (Chapter 16). The brief history of the
artiodactyls puts the Anza-Borrego assemblages in perspective. The va-
riety of small artiodactyls implies a wide diversity of habitats in the past.
The section on the camels (Chapter 17) reviews their unique foot
structure and its functional significance and the origin of the pacing gait
in this group. Like the horses, the camels show a high diversity that raises
the same question of how resources were partitioned among similar ani-
mals.

Chapter 18 documents the fossil footprints of the Anza-Borrego se-
quence. Chapter 19 expands on the Great American Interchange that is
alluded to in Chapter 10. There is a brief mention of the Bering Land
Bridge and its significance in the shaping of the mammalian fauna of