

A Linear View of Historical Geology

Compiled by Gwenn Ziegler

Reviewed & Edited by Pam Nelson

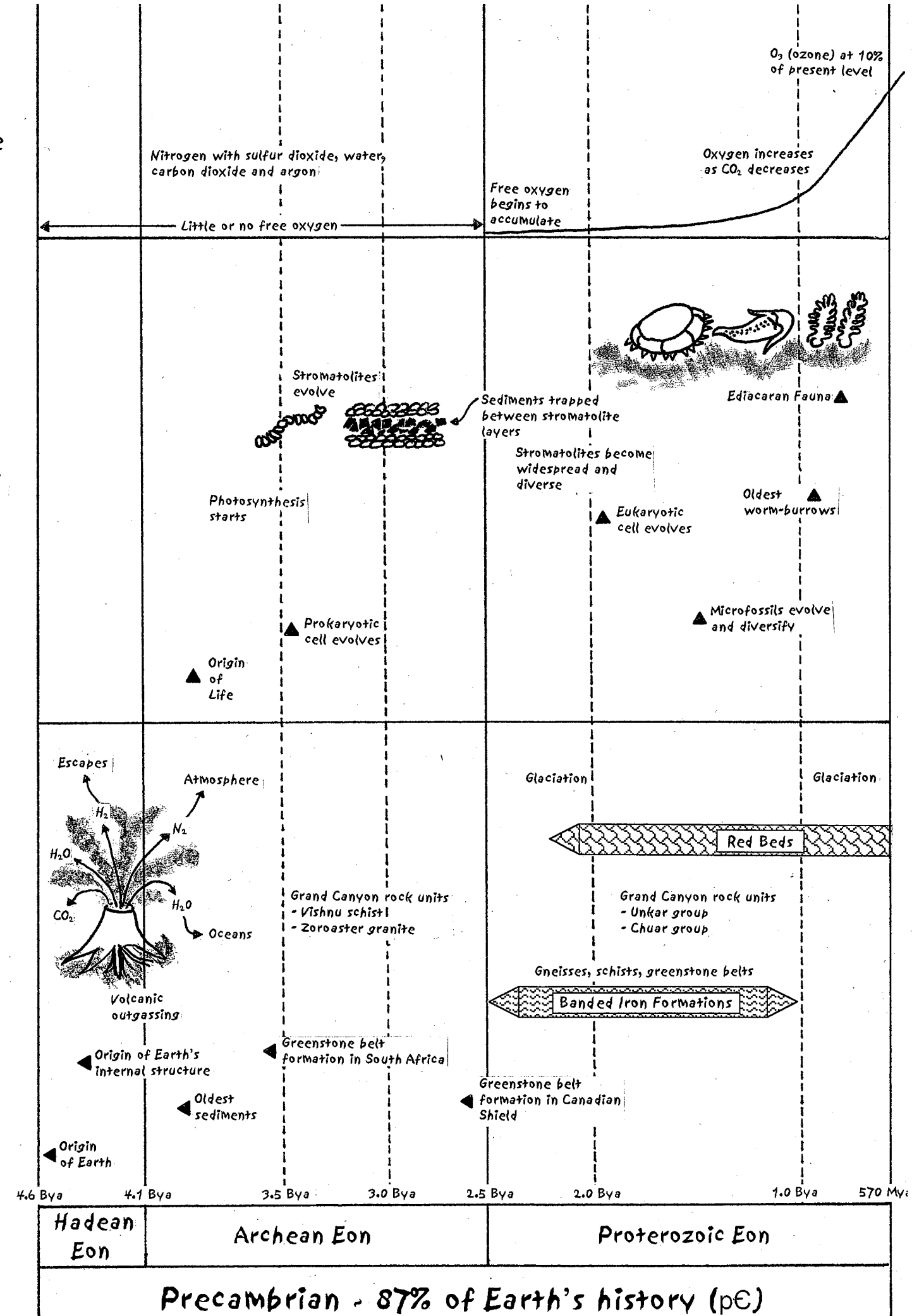
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Atmosphere

Biosphere

Lithosphere



Vertebrates

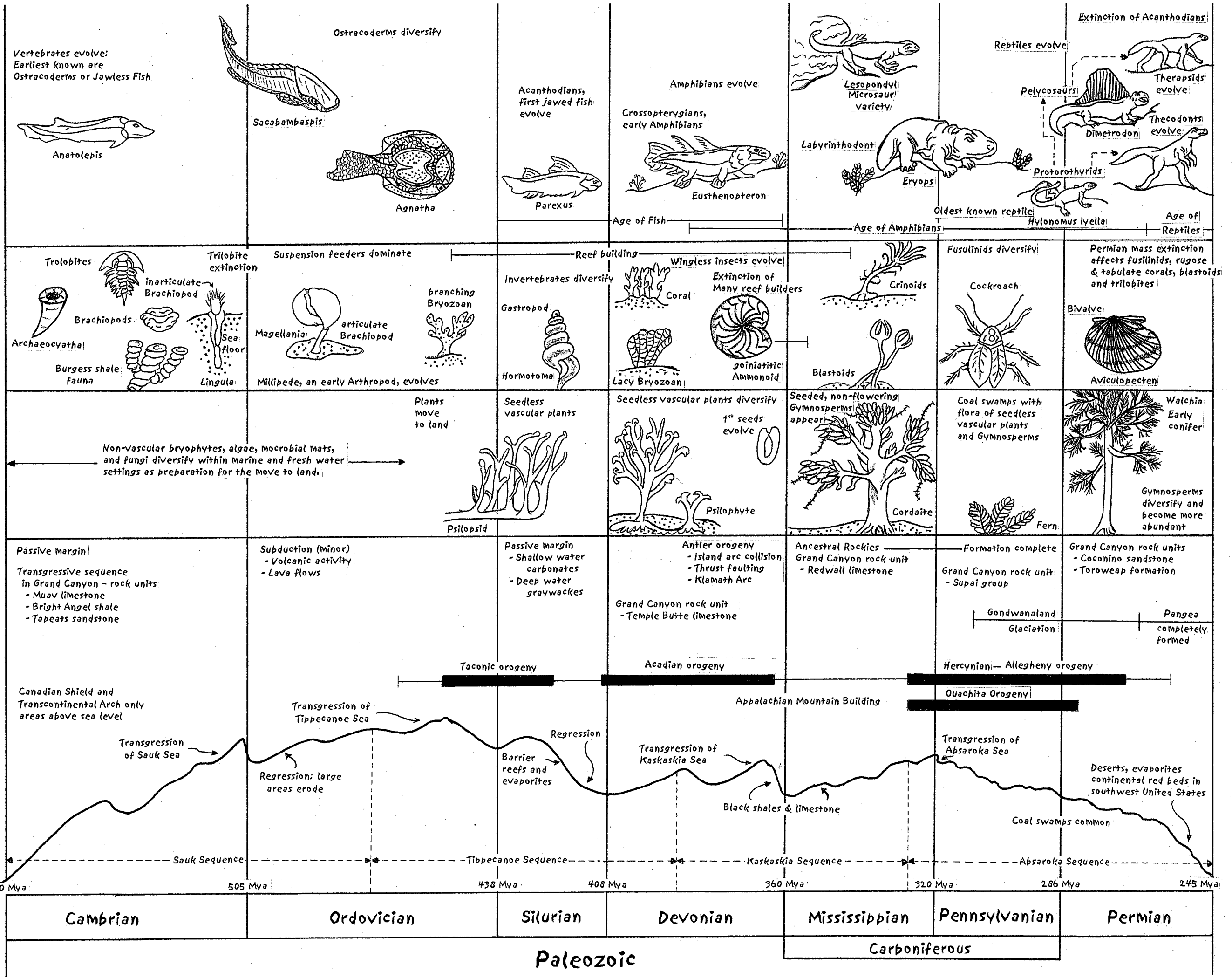
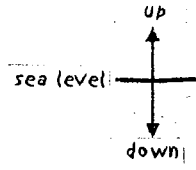
Biosphere

Invertebrates

Plants

Western Margin of North America

Lithosphere



Biosphere

Vertebrates

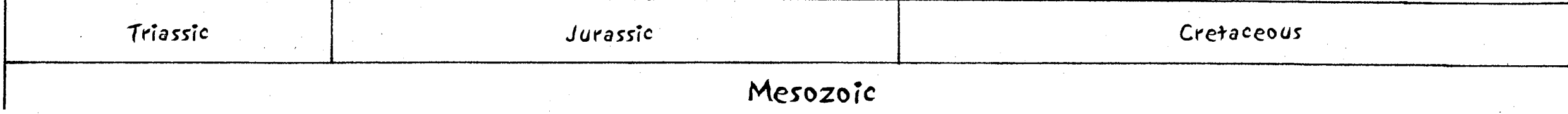
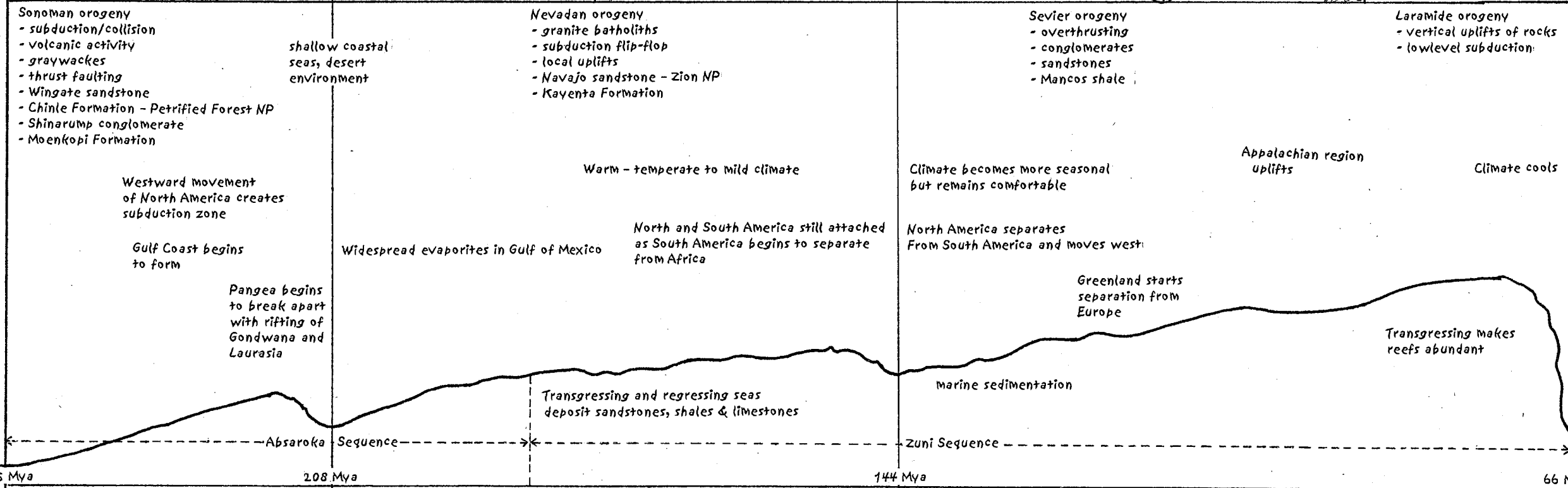
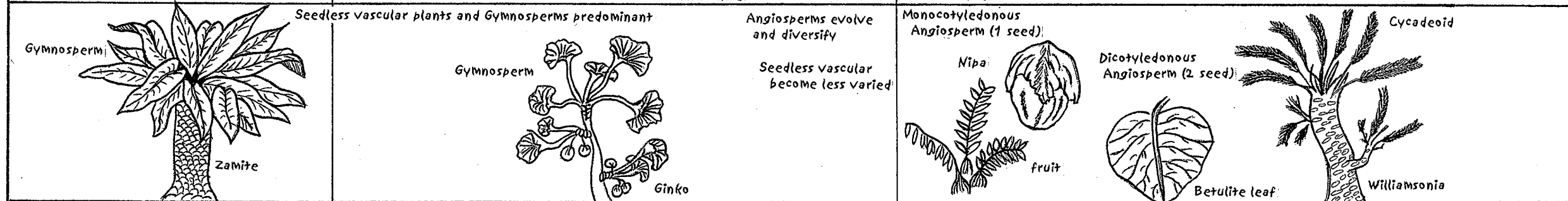
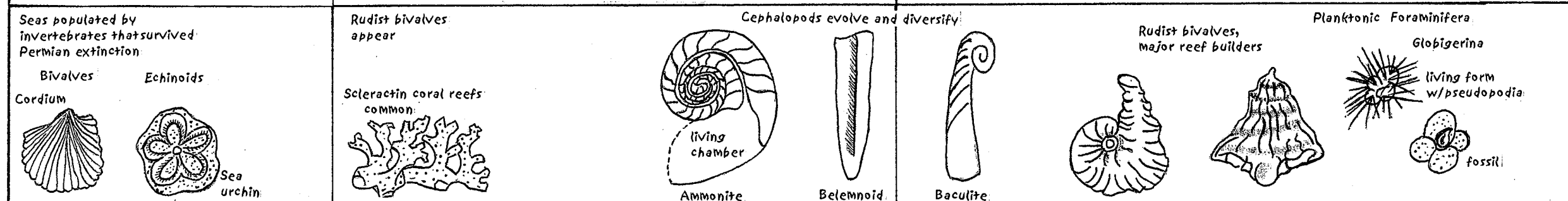
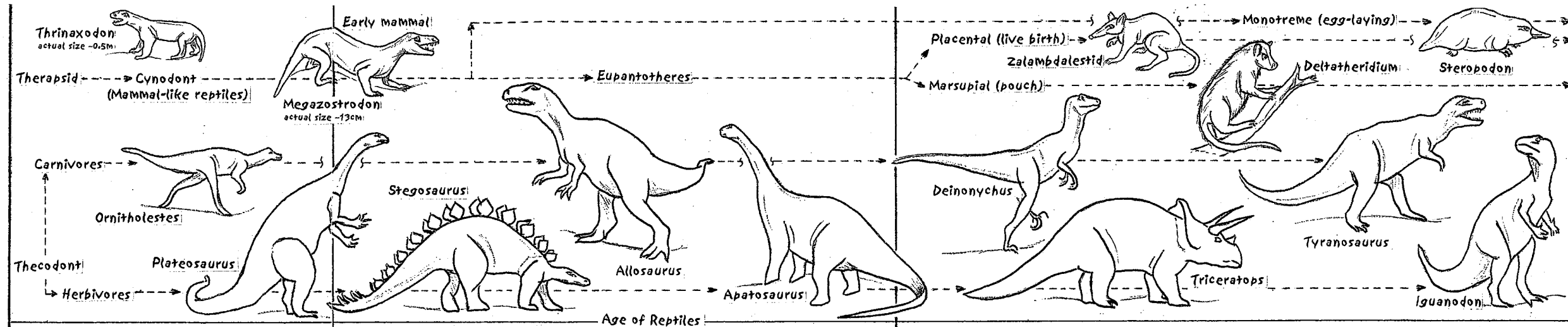
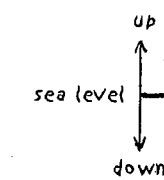
Dinosaurs

Invertebrates

Plants

Western Margin of North America

Lithosphere



KT Extinction - Mass extinction at the end of the Cretaceous

---Vertebrates

Biosphere

---Invertebrates

---Plants

Western Margin of
North America

Lithosphere

up
sea level
down

66 Mya

Paleocene

58 Mya

Eocene

37 Mya

Oligocene

24 Mya

Miocene

5 Mya

Pliocene

2 Mya

Tertiary

Cenozoic

Quaternary

Condylarths are
early ungulates

Phenacodus



Carnivores evolve during the Eocene
from an ungulate ancestor. Earliest
form had hooves.

Creodonts are
early flesh-eaters

Patriofelis



Creodonts co-evolved with carnivores,
but became extinct by end of Eocene

Shrew



Insectivores diversify. Common
descendents are bats, primates,
flesh-eating mammals, herbivores,
and marine mammals

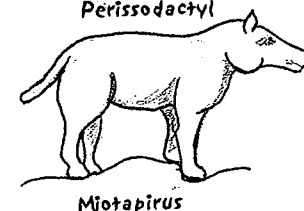
Carnivores
develop claws

Perissodactyls, odd-toed hooved
ungulates, evolve from Condylarths.

Artiodactyls, even-toed hooved
ungulates, evolve from Condylarths

First
Monkey

Perissodactyl

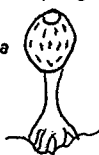


Perissodactyls evolve into
present day tapirs, horses,
and rhinos

Artiodactyls evolve into present
day boars, pigs, hippos, camels,
deer, cattle, and giraffes

Demospongiae

Siphonia

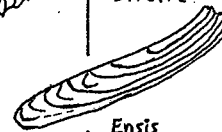


Foraminifera



Nummulite

Bivalve



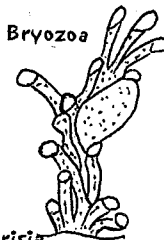
Ensis

Scleractin
Brain Coral



Meandrina

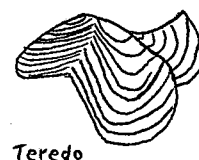
Bryozoa



Crisia

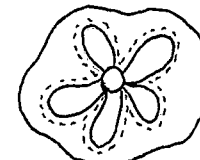
Echinodermata

Bivalve



Teredo

Clypeaster

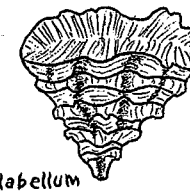


Brachiopod



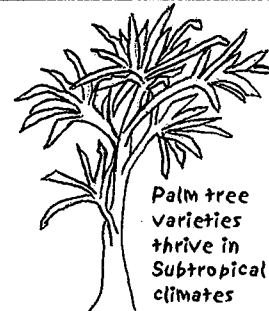
Terebratula

Scleractin coral



Flabellum

Gastropod

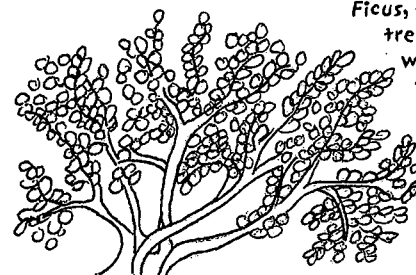


Palm tree
varieties
thrive in
Subtropical
climates

Aquatic plants
common

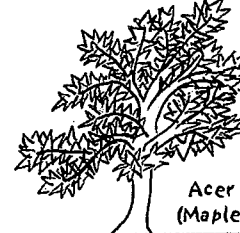


Cattails

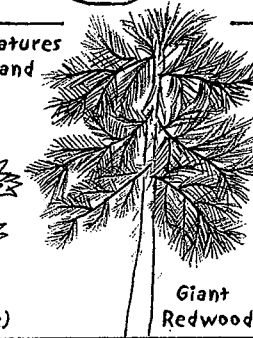


Ficus, the fig, a flowering
tree that became
widespread during
the Eocene

Cooler and drier temperatures
encourage evolution and
conifer tree species

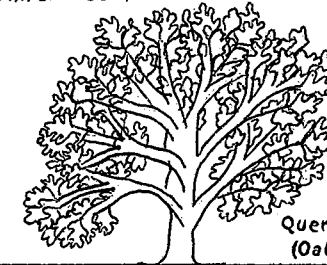


Acer
(Maple)



Giant
Redwood

encourage evolution and
conifer tree species



Quercus
(Oak)

Various grass varieties
develop and begin to
rapidly expand. This
paves the way for
numerous changes in
the Pliocene

Laramide Orogeny
continues with
vertical uplifts

Colorado Plateau
@ low elevation

Compression of Rocky
Mountains over by
Mid-Eocene

Colorado Plateau downwarped;
freshwater lake forms in Utah

North & South America separated

Period of global warming due to an
increase of methane in the atmosphere
(called the greenhouse effect)

Global warming causes sea temperatures
to rise 7-14°F in 1000 years

Basin & Range
forms in Nevada

Flood basalt flows in Washington,
Oregon & Idaho create the
Columbia Plateau

Shiprock Volcano
erupts ~27 Mya
(remnant seen @
Shiprock, NM)

Volcanic activity forms Central
America and connects North &
South America

Climate begins to
cool ~35 Mya

Regional uplifts occur
Volcanism is common

Faulting & uplifts form the Basin & Range
Province in the Southwest of North America

India collides with Asia and the
Himalaya Mountains begin to form

Holocene

Pleistocene