WORK-IN-PROGRESS (APRIL 29, 2015) PARALLEL CHART FOR

Paper 60 — Urantia During the Early Land-life Era

© 2015 Matthew Block

Endnotes and some Urantia Book cross-references have been deleted to enhance readability.

Sources for Paper 60, in the order in which they first appear

(1) Thomas C. Chamberlin and Rollin D. Salisbury, *A College Text-book of Geology* (New York: Henry Holt and Company, 1909)

(2) Charles Schuchert, *A Text-book of Geology, Part II: Historical Geology, Second, Revised Edition* (New York: John Wiley & Sons, Inc., 1924)

(3) Charles Schuchert and Carl O. Dunbar, *A Textbook of Geology, Part II—Historical Geology, Third Edition, Largely Rewritten* (New York: John Wiley & Sons, Inc., 1933)

(4) Louis V. Pirsson, *A Text-book of Geology, Part I—Physical Geology, Second, Revised Edition* (New York: John Wiley & Sons, Inc., 1920)

(5) Reginald Aldworth Daly, *Our Mobile Earth* (New York: Charles Scribner's Sons, 1926)

Key

(a) Green indicates where a source author first appears, or where he/she reappears.

(b) Yellow highlights most parallelisms.

(c) Tan highlights parallelisms not occurring on the same row.

(d) An underlined word or words indicates where the source and the UB writer pointedly differ from each other.

(e) Blue indicates original (or "revealed") information, or UB-specific terminology and concepts. (What to highlight in this regard is debatable; the highlights are tentative.)

(f) Red indicates where the UB writer apparently misread or disagreed with the source text, resulting in a statement whose erroneousness would have been recognized at the time the paper was written as well as now.

(g) Brown indicates passages relating to continental drift. Daly is the only source author who accepted continental drift, but I find no specific parallels between his and the UB's narrations. Further, Daly does not attribute the western mountain chains in North and South America to those continents hitting an obstruction "on the deep floor of the Pacific".

Matthew Block
29 April 2015

Work-in-progress Version 29 April 2015
© 2015 Matthew Block

PAPER 60 — URANTIA DURING THE EARLY LAND-LIFE ERA

60:0.1 The era of exclusive marine life has ended. Land elevation, cooling crust and cooling oceans, sea restriction and consequent deepening, together with a great increase of land in northern latitudes, all conspired greatly to change the world's climate in all regions far removed from the equatorial zone.

XXIII: THE TRIASSIC PERIOD (Chamberlin & Salisbury 678)

THE LIFE OF THE TRIASSIC PERIOD (Chamberlin & Salisbury 690)

The Land Animals (Chamberlin & Salisbury 691)

60:0.2 The closing epochs of the preceding era were indeed the age of frogs,

The *amphibians* had lost the foremost place they held in the Permian, though still numerous (but not in North America in the early part of the period). Before its close, however, they entered upon a rapid decline, from which they never recovered. Ancestors of the whole tribe of terrestrial vertebrates, they soon became its most insignificant representatives (C&S 692).

but these ancestors of the land vertebrates were no longer dominant, having survived in greatly reduced numbers.

Very few types outlived the rigorous trials of the preceding period of biologic tribulation.

SOURCE OR PARALLEL	URANTIA PAPER 60
XXXIII: THE BEGINNING OF MESOZOIC TIME: THE TRIASSIC PERIOD (Schuchert 453)	
Mesozoic Era (Schuchert 453)	
Characteristic Life of Mesozoic Time. (Schuchert 453)	
The floras had also undergone great changes, since all of the more significant spore-bearing plants of the Paleozoic were practically gone and the ancient ferns were changing in to the modern stocks (S 454).	Even the spore-bearing plants were nearly extinct.
	1. THE EARLY REPTILIAN AGE
XXIII: THE TRIASSIC PERIOD (Chamberlin & Salisbury 678)	
FORMATIONS AND PHYSICAL HISTORY (Chamberlin & Salisbury 678)	
The Eastern Triassic—The Newark Series (Chamberlin & Salisbury 678)	
Distribution. (Chamberlin & Salisbury 678)	
Sandstones and shales predominate, but there are abundant conglomerates, some breccias, and, locally, limestone and coal (C&S 680). [*Also see endnote.*]	60:1.1 The erosion deposits of this period were mostly conglomerates, shale, and sandstone.[1]
Climatic Conditions (Chamberlin & Salisbury 686)	
[contd] The wide distribution of gypsum and salt in the Triassic system, not only of America but of Europe, is good evidence of wide-spread aridity. The prevalent redness of the system, in other continents as well as our own, is also commonly regarded as an indication of aridity (C&S 686).	The gypsum and red layers throughout these sedimentations over both America and Europe indicate that the climate of these continents was arid.

SOURCE OR PARALLEL	URANTIA PAPER 60
Violent storms (cloud-bursts), which often characterize arid climates, might account for the transportation of debris from the place of its origin to the place of its deposition (C&S 686).	These arid districts were subjected to great erosion from the violent and periodic cloudbursts on the surrounding highlands.
The Eastern Triassic—The Newark Series (Chamberlin & Salisbury 678)	
The sandstone and shale. (Chamberlin & Salisbury 680)	
Except locally, the series is poor in fossils (C&S 681).	60:1.2 Few fossils are to be found in these layers,
Conditions of origin. (Chamberlin & Salisbury 681)	
[contd] The character of the Newark formations and their fossils, mainly land plants, footprints of reptiles, and fresh- or brackish-water fishes, indicate that they are of continental rather than marine origin, though the precise manner in which they were laid down is not known (C&S 681).	but numerous sandstone footprints of the land reptiles may be observed.
THE LIFE OF THE TRIASSIC PERIOD (Chamberlin & Salisbury 690)	
The Land Animals (Chamberlin & Salisbury 691)	
What became of Permian vertebrate faunas of North America is unknown, for between the horizons yielding Permian fossils of land animals, and those yielding corresponding Upper Triassic fossils, there are great thicknesses of red sandstone barren of fossils of all sorts, so far as now known ... (C&S 692).	In many regions the one thousand feet of red sandstone deposit of this period contains no fossils.
In Africa there appears to have been a much less serious break between the land life of the Permian and that of the Trias (C&S 692).	The life of land animals was continuous only in certain parts of Africa.

SOURCE OR PARALLEL	URANTIA PAPER 60
FORMATIONS AND PHYSICAL HISTORY (Chamberlin & Salisbury 678)	
The Eastern Triassic—The Newark Series (Chamberlin & Salisbury 678)	
Thickness. (Chamberlin & Salisbury 683)	
[contd] On account of the faulting, the thickness of the Newark series is difficult of determination. In the Richmond area of Virginia, it is estimated at something more than 3,000 feet; in New England, at 7,000 to 10,000 feet; and in New Jersey even more (C&S 683).	60:1.3 These deposits vary in thickness from 3,000 to 10,000 feet,
On the Pacific Slope (Chamberlin & Salisbury 685)	
The published measurements assign the system the great thickness of 17,000 feet (maximum) in the West Humboldt range of Nevada, where it rests on pre-Cambrian terranes (C&S 686).	even being 18,000 on the Pacific coast.
The Eastern Triassic—The Newark Series (Chamberlin & Salisbury 678)	
Igneous rocks. (Chamberlin & Salisbury 682)	
Some of the sheets are extrusive, having been poured out on the surface of the inferior beds and subsequently covered by sediment; others are intrusive (*sills*), having been forced in between the layers of sedimentary rocks after the latter were deposited (C&S 682).	Lava was later forced in between many of these layers.

SOURCE OR PARALLEL	URANTIA PAPER 60
XXXIII: THE BEGINNING OF MESOZOIC TIME: THE TRIASSIC PERIOD (Schuchert 453)	
TRIASSIC OF NORTH AMERICA (Schuchert 455)	
Newark Series (Schuchert 457)	
Igneous Material. (Schuchert 459)	
[contd] In all of the areas from Nova Scotia to North Carolina are found igneous rocks that in the lower strata occur as intruded sheets and dikes of trap (diabase), and higher up are extruded sheets of basaltic lavas in thicknesses up to 900 feet (Figs., p. 458, and opposite). These are seen to best advantage along the Hudson River of New Jersey, where they make the well known Palisades, whose vertical walls of columnar rock exhibit the edge of a great intruded sheet of diabase (Fig., p. 460) (S 459).	The Palisades of the Hudson River were formed by the extrusion of basalt lava between these Triassic strata.
[During early Triassic time, throughout western Alaska from the Alaska Range eastward and southward through eastern British Columbia, volcanoes were very active ... (S 467).]	Volcanic action was extensive in different parts of the world.
XXIII: THE TRIASSIC PERIOD (Chamberlin & Salisbury 678)	
FOREIGN TRIASSIC (Chamberlin & Salisbury 687)	
Europe (Chamberlin & Salisbury 687)	
[contd] In Europe, the Trias is exposed in many widely separated places, the largest being in northwestern Russia; but the system is better known in the western part of the continent (C&S 687).	60:1.4 Over Europe, especially Germany and Russia, may be found deposits of this period.

SOURCE OR PARALLEL	URANTIA PAPER 60
Northern Europe. (Chamberlin & Salisbury 688)	
[contd] The Bunter formation of *Germany* was deposited chiefly in lakes, inland seas, and on land, as shown by the fossils, the beds of salt and gypsum, and the dune structure of some of the sandstone (C&S 688).	
In *England* the system is often known as the New Red Sandstone, though formerly the Permian was also included under this term (C&S 689).	In England the New Red Sandstone belongs to this epoch.
Southern Europe. (Chamberlin & Salisbury 689)	
[contd] The Alpine or marine phase of the Triassic has its best development in the eastern and southern Alps, and is made up of thick beds of limestone, often dolomitic, alternating with thinner beds of clastic rock (C&S 689).	Limestone was laid down in the southern Alps as the result of a sea invasion
In these regions the dolomite (limestone) stands up in bare, bold-faced walls, peaks, and towers, surrounded and separated by valleys and passes clothed with abundant vegetation (C&S 690).	and may now be seen as the peculiar dolomite limestone walls, peaks, and pillars of those regions.
Other Continents (Chamberlin & Salisbury 690)	
The Triassic system is represented also in South Africa, Australia, New Zealand, and New Caledonia (C&S 690).	This layer is to be found all over Africa and Australia.
Europe (Chamberlin & Salisbury 687)	
Southern Europe. (Chamberlin & Salisbury 689)	
The Trias of the Italian Alps is the source of the Carrara marble (C&S 690). [*See endnote.*]	The Carrara marble comes from such modified limestone.[2]

SOURCE OR PARALLEL	URANTIA PAPER 60
Other Continents (Chamberlin & Salisbury 690)	
South America. (Chamberlin & Salisbury 690)	
[contd] No marine deposits of Triassic age are known east of the Andes, but coal-bearing Trias occurs in Argentina and Chile, and marine beds at various points in the Andes.	Nothing of this period will be found in the southern regions of South America
Thus it is clear that the site of parts of this great system of mountains was beneath the sea in the Triassic period (C&S 690).	as that part of the continent remained down
[?]	and hence presents only a water or marine deposit continuous with the preceding and succeeding epochs.
	60:1.5 *150,000,000* years ago the early land-life periods of the world's history began.
THE LIFE OF THE TRIASSIC PERIOD (Chamberlin & Salisbury 690)	
[contd] The remarkable physical conditions that dominated the land and impoverished its life in the Permian period still held sway during the earlier part of the Triassic.... Toward the close of the Triassic there was a pronounced change. The land became lower and the sea encroached upon it, bringing about appropriate changes in life (C&S 690).	Life, in general, did not fare well but did better than at the strenuous and hostile close of the marine-life era.

SOURCE OR PARALLEL	URANTIA PAPER 60
XXXIII: THE BEGINNING OF MESOZOIC TIME: THE TRIASSIC PERIOD (Schuchert 453)	
TRIASSIC OF NORTH AMERICA (Schuchert 455)	
Significant Things about the Triassic. (Schuchert 455)	
	60:1.6 As this era opens,
The physical conditions and the absence of the sea in eastern North America in Triassic time were also repeated in South America, most of Africa, and northern Europe and Asia (S 456).	the eastern and central parts of North America, the northern half of South America, most of Europe, and all of Asia are well above water.
[*Contradiction:* 59:3.8 says that North America was cut off from other continents during the Permian. C&S say that the isolation began in the Pennsylvanian and lasted until well into the Triassic.]	North America for the first time is geographically isolated,
	but not for long as the Bering Strait land bridge soon again emerges, connecting the continent with Asia.
XXIII: THE TRIASSIC PERIOD (Chamberlin & Salisbury 678)	
FORMATIONS AND PHYSICAL HISTORY (Chamberlin & Salisbury 678)	
[contd] During the closing stages of the Paleozoic, ... Appalachia appears to have suffered deformation. One result of this deformation was the development of elongate troughs upon its surface, roughly parallel to the present coast (C&S 678).	60:1.7 Great troughs developed in North America, paralleling the Atlantic
[During Triassic time the Pacific geosyncline reappeared inside the margin of the continent, its axis running parallel to the present Pacific coast from California to Alaska (S&D 303).]	and Pacific coasts.

SOURCE OR PARALLEL	URANTIA PAPER 60
[Such major fault lines occur along the eastern side of the Connecticut valley (here the displacement is about 2 miles) and others are known in the western parts of the Triassic areas of Maryland, New Jersey, Pennsylvania, and Nova Scotia (S 457).]	The great eastern-Connecticut fault appeared, one side eventually sinking two miles.
[contd from three rows up] These troughs became sites of deposition, and the sediments laid down in them constitute the only representative of the Triassic system in the eastern part of the continent (C&S 678).	Many of these North American troughs were later filled with erosion deposits,
[S]edimentation was in progress over considerable areas between the meridians 100º and 113º. Some of these areas appear to have been the sites of salt seas and some of fresh lakes, while still others were probably without standing water (C&S 678).	as also were many of the basins of the fresh- and salt-water lakes of the mountain regions.
XXXIII: THE BEGINNING OF MESOZOIC TIME: THE TRIASSIC PERIOD (Schuchert 453)	
TRIASSIC OF NORTH AMERICA (Schuchert 455)	
Marine Triassic of Western North America (Schuchert 464)	
Triassic of the British Columbic Sea. (Schuchert 466)	
In the coastal mountains of British Columbia [the interbedded marine and volcanic deposits] have been eroded away from the granitic bathyliths that rose beneath them toward the close of Jurassic time and that lifted them high into mountains (S 467).	Later on, these filled land depressions were greatly elevated by lava flows which occurred underground.

SOURCE OR PARALLEL	URANTIA PAPER 60
Triassic Red Beds of the Cordilleran Region (Schuchert 467)	
Characteristic plant remains are almost absent, but nearly everywhere occurs drifted wood that is now agatized; in the Petrified Forest of Arizona, near Flagstaff, this is exceedingly common ... (S 468-69).	The petrified forests of many regions belong to this epoch.
[*See* Plate 33.—Paleogeography of Triassic time. (S 465)]	60:1.8 The Pacific coast, usually above water during the continental submergences, went down excepting the southern part of California and a large island which then existed in what is now the Pacific Ocean.
Marine Triassic of Western North America (Schuchert 464)	
[Professor J. Perrin Smith of Stanford University] states that the sequence of Triassic formations and faunas of the Californic sea is unusually complete, and compares favorably with that of most other regions of marine sedimentation (S 466).	This ancient California sea was rich in marine life
[*See* Plate 33.—Paleogeography of Triassic time. (S 465)]	and extended eastward to connect with the old sea basin of the midwestern region.
	60:1.9 *140,000,000* years ago, *suddenly*
[*See* 59:6.8 and C&S 672.]	and with only the hint of the two prereptilian ancestors that developed in Africa during the preceding epoch,
[*Contrast* C&S 672, which puts the appearance of full-fledged reptiles at "little beyond the beginning of the Permian".]	the reptiles appeared in full-fledged form.

SOURCE OR PARALLEL	URANTIA PAPER 60
XXIII: THE TRIASSIC PERIOD (Chamberlin & Salisbury 678)	
THE LIFE OF THE TRIASSIC PERIOD (Chamberlin & Salisbury 690)	
The Land Animals (Chamberlin & Salisbury 691)	
The strange ancestral *reptiles* evolved rapidly (C&S 692).	They developed rapidly,
The crocodilians, the flying saurians, and the scaled reptiles (lizards, snakes, etc.) came in near the close of the period,	soon yielding crocodiles, scaled reptiles, and eventually both sea serpents and flying reptiles.
as some of the older types were disappearing (C&S 692).	Their transition ancestors speedily disappeared.
[contd] A foremost feature of the life was the advent and rapid evolution of the dinosaurs (terrible saurians), the reigning reptilian dynasty of the era (C&S 692-93).	60:1.10 These rapidly evolving reptilian dinosaurs soon became the monarchs of this age.
XXXIV: DINOSAURS, THE MIGHTY RULERS OF MESOZOIC LANDS (Schuchert 479)	
PART II. DINOSAURS IN GENERAL (Schuchert 490)	
Dinosaur Eggs. (Schuchert 494)	
[I]t might be supposed that, like crocodiles and alligators, most of the dinosaurs laid eggs and left them to be hatched by the heat of the sun. This supposition has recently been confirmed by the American Museum Expedition's discovery of many dinosaur eggs in Mongolia (S 494).	They were egg layers
Small Brains. (Schuchert 494)	
	and are distinguished from all animals by their small brains,

SOURCE OR PARALLEL	URANTIA PAPER 60
[See next pg.]	having brains weighing less than one pound to control bodies later weighing as much as forty tons.
XXIII: THE TRIASSIC PERIOD (Chamberlin & Salisbury 678)	
THE LIFE OF THE TRIASSIC PERIOD (Chamberlin & Salisbury 690)	
The Land Animals (Chamberlin & Salisbury 691)	
Carnivorous forms only (*Theropoda*) are known in the Trias, and most of them were not especially large (C&S 693-94).	But earlier reptiles were smaller, carnivorous,
The strong development of the hinder parts, the relative weakness of the fore limbs, and the kangaroo-like attitude, are the most obvious features.	and walked kangaroolike on their hind legs.[3]
The bones of these upright-walking forms were hollow, and certain other structural features resemble those of birds.	They had hollow avian bones
The reduction of the functional toes of the hind feet to four, with one of them much shorter than the others,	and subsequently developed only three toes on their hind feet,
caused their three-toed tracks to be mistaken for those of birds, until recently (C&S 694).	and many of their fossil footprints have been mistaken for those of giant birds.
XXXIV: DINOSAURS, THE MIGHTY RULERS OF MESOZOIC LANDS (Schuchert 479)	
INTRODUCTION (Schuchert 479)	
	Later on, the herbivorous dinosaurs evolved.
[H]ugest of all were the sauropods, vegetarians walking on all fours, with more or less pillar-like legs, long snake-like necks, long tails,	They walked on all fours,

and a brain weighing less than a pound to govern a body with a weight of about 40 tons, and a length of 60 to 80 feet! (S 479-81)

Most curious of all, however, were the armored types, covered with plates and spines; these were also plant-feeders and quadrupedal in gait (S 481).

and one branch of this group developed a protective armor.

XXIII: THE TRIASSIC PERIOD (Chamberlin & Salisbury 678)

THE LIFE OF THE TRIASSIC PERIOD (Chamberlin & Salisbury 690)

The Land Animals (Chamberlin & Salisbury 691)

The advent of mammals. (Chamberlin & Salisbury 694)

[contd] Of peculiar interest is the appearance of early forms of non-placental mammals.... In view of the mammalian dominance of later times, it is note-worthy that the non-placentals developed but slowly and feebly during the Mesozoic era (C 694).

60:1.11 Several million years later the first mammals appeared. They were nonplacental

and proved a speedy failure; none survived. This was an experimental effort to improve mammalian types, but it did not succeed on Urantia.

The Marine Life (Chamberlin & Salisbury 695)

[contd] The reduction of marine life of the shallow-water type during the Permian (p. 673) was continued into the Triassic period, and since its remains are in sediments now buried, such record as it made is mainly concealed (C&S 695).

60:1.12 The marine life of this period was meager

[Compare C&S 695.]

but improved rapidly with the new invasion of the sea, which again produced extensive coast lines of shallow waters.

SOURCE OR PARALLEL	URANTIA PAPER 60
The transition tracts. (Chamberlin & Salisbury 695)	
[contd] It was otherwise on the Eurasian continent (C&S 695).	Since there was more shallow water around Europe and Asia,
	the richest fossil beds are to be found about these continents.
	Today, if you would study the life of this age,
The Mediterranean, the Himalayan, and the Siberian regions are the best known tracts into which the shallow-water marine life of the late Paleozoic retreated and underwent transformation into the early provincial faunas of the Mesozoic (C 695-96).	examine the Himalayan, Siberian, and Mediterranean regions,
The transition faunas. (Chamberlin & Salisbury 696)	
[contd] The most complete record of the transition from Paleozoic to Mesozoic marine life is found in India (C&S 696).	as well as India
[?]	and the islands of the southern Pacific basin.
XXX: THE BEGINNING OF MESOZOIC TIME: THE TRIASSIC PERIOD (Schuchert 453)	
TRIASSIC OF NORTH AMERICA (Schuchert 455)	
Life of the Triassic (Schuchert 472)	
Marine Invertebrates. (Schuchert 476)	
[contd] The seas swarmed with ammonids in great variety ... They were not only the most beautiful and characteristic animals of the Mesozoic seas, but also the highest expression of invertebrate evolution in agility and in predaceous and scavenging ability.	A prominent feature of the marine life was the presence of hosts of the beautiful ammonites,

SOURCE OR PARALLEL	URANTIA PAPER 60
Some of the [not fewer than 2600 named] species spread widely throughout the world (S 476).	whose fossil remains are found all over the world.
	60:1.13 *130,000,000* years ago the seas had changed very little.
The geographic suggestions of the faunas. (Chamberlin & Salisbury 698)	
By the middle of the Triassic period the faunas had begun to intermingle, and to lose their provincial characteristics.... At about the same time [that the Mediterranean fauna gained access to the Indian basin and to our western coast], the Siberian fauna had access to western United States (C&S 698-99).	Siberia and North America were connected by the Bering Strait land bridge.
[contd] During the later stages of the period, a rich marine fauna flourished in California (C&S 699).	A rich and unique marine life appeared on the Californian Pacific coast,[4]
The most conspicuous feature of the Triassic faunas was the re-ascendancy of the *cephalopods* in the form of the *ammonites,* which had a marvellous development during the period, reaching a thousand species (C&S 699).	where over one thousand species of ammonites developed from the higher types of cephalopods.
While the general aspect of the Triassic marine faunas was revolutionary, it is important to note, in view of beliefs once current, that it was transitional, and not an abrupt substitution of a new fauna for an old one (C&S 701).	The life changes of this period were indeed revolutionary notwithstanding that they were transitional and gradual.
	60:1.14 This period extended over twenty-five million years and is known as the *Triassic.*

SOURCE OR PARALLEL	URANTIA PAPER 60
	2. THE LATER REPTILIAN AGE
	60:2.1 *120,000,000* years ago a new phase of the reptilian age began. The great event of this period was the evolution and decline of the dinosaurs. Land-animal life reached its greatest development, in point of size, and had virtually perished from the face of the earth by the end of this age.
XVI: THE JURASSIC PERIOD (Schuchert & Dunbar 317)	
LIFE OF THE JURASSIC PERIOD (Schuchert & Dunbar 330)	
The Sway of Reptile Hordes. (Schuchert & Dunbar 333)	
	The dinosaurs evolved in all sizes
In addition, there were bipedal carnivores of large and small size, one of which, *Compsognathus,* must have been as agile and slender as a small kangaroo, for it was only 2½ feet long (S&D 334).	from a species less than two feet long up
Brontosaurus (Fig. 196), one of the best-known American forms, reached a length of about 65 feet, but the more slender Diplodocus had a length of nearly 80 feet; the brain of each of these huge animals, however, weighed less than a pound (S&D 334).	to the huge noncarnivorous dinosaurs, seventy-five feet long,
	that have never since been equaled in bulk by any living creature.

SOURCE OR PARALLEL	URANTIA PAPER 60
CHARACTER AND DISTRIBUTION OF THE JURASSIC FORMATIONS (Schuchert & Dunbar 322)	
Morrison Formation and its Dinosaurs. (Schuchert & Dunbar 324)	
	60:2.2 The largest of the dinosaurs originated in western North America.
[contd] All the gigantic dinosaurs of the American Jurassic have come from a single formation ... in the Cordilleran region. The formation is named for its exposure at Morrison, near Denver, but but it ... originally [covered] more than 100,000 square miles of the Rocky Mountain region (S&D 324).	These monstrous reptiles are buried throughout the Rocky Mountain regions,
[*Compare:* Dinosaur remains occur in all continents, but chiefly in North America, Africa, China, and Argentina.... Carnivorous dinosaurs are the most widely spread, in fact, are world-wide in distribution. The same appears to be almost as true of the ponderous sauropods, though they are best known in North America, Africa, and Argentina. The beaked dinosaurs are wholly unknown in South America and Australia (S 490).]	along the whole of the Atlantic coast of North America, over western Europe, South Africa, and India, but not in Australia.
[*Compare:* This enormous creature [*i.e.* the *Brontosaurus*] was characterized by weakness rather than strength, for its general organization was unwieldy, its head small, and its brain had less diameter than its spinal cord. "The task of providing food for so large a body must have been a severe tax on so small a head" (C&S 720-21).]	60:2.3 These massive creatures became less active and strong as they grew larger and larger;
	but they required such an enormous amount of food and the land was so overrun by them that they literally starved to death and became extinct—they lacked the intelligence to cope with the situation.

XXIV: THE JURASSIC PERIOD (Chamberlin & Salisbury 702)

FORMATIONS AND PHYSICAL HISTORY (Chamberlin & Salisbury 702)

The eastern part of the continent. (Chamberlin & Salisbury 702)

Erosion seems to have been the leading geologic process in the eastern part of the continent during the period. Its effectiveness may be judged by the fact that both the uplifted and deformed Triassic system and the Appalachian mountain region farther west were essentially base-leveled before the Comanchean period was far advanced.

60:2.4 By this time most of the eastern part of North America, which had long been elevated, had been leveled down

The sediments worn away from these areas were deposited somewhere, presumably east of the present coast (C&S 702).

and washed into the Atlantic Ocean

[*Compare:* The Appalachian Revolution (see p. 426) not only raised the eastern border of North America into a mountainous tract, but continued the continent to an unknown distance, at least some hundreds of miles, into the Atlantic Ocean as well (S 456).]

so that the coast extended several hundred miles farther out than now.

The western interior. (Chamberlin & Salisbury 702)

The western part of the continent was still up,

Late in the period, an arm of the sea extended itself over a large tract in the western interior (Fig. 475), covering much of Wyoming, Utah, and Colorado, and parts of several other states (C&S 702-04).

but even these regions were later invaded by both the northern sea and the Pacific,

The beds are chiefly exposed in the mountains (Wasatch, Uinta, Black Hills, etc.) where the erosion which followed the uplift and deformation of the strata has discovered their edges (C&S 704).

which extended eastward to the Dakota Black Hills region.

SOURCE OR PARALLEL	URANTIA PAPER 60
	60:2.5 This was a fresh-water age characterized by many inland lakes,
The presence of fresh-water beds (the Morrison [or Como] beds of Colorado, Montana, and Wyoming), sometimes regarded as of late Jurassic age in some parts of the western interior, would, were their age established, show that the sea-water withdrew before the end of the period (C&S 705).	as is shown by the abundant fresh-water fossils of the so-called Morrison beds of Colorado, Montana, and Wyoming.
Thickness. (Chamberlin & Salisbury 707)	
[contd] The total thickness of the system in California does not exceed 2,000 feet (in part tuff). Farther east, in western Nevada, nearer the land whence sediment was derived, it attains a thickness twice or thrice as great,	The thickness of these combined salt- and fresh-water deposits varies from 2,000 to 5,000 feet;
being made up of limestone below, and slates above (C&S 707).	but very little limestone is present in these layers.
FOREIGN JURASSIC (Chamberlin & Salisbury 708)	
Extra-European Jurassic (Chamberlin & Salisbury 709)	
[contd] The Upper Jurassic is widespread in *Arctic lands*. This distribution points to a great Arctic sea in the later part of the period, with two considerable dependencies in the south,—the one in Russia, the other, as we have seen, in western America (C&S 709).	60:2.6 The same polar sea that extended so far down over North America
[?]	likewise covered all of South America except the soon appearing Andes Mountains.[5]
	Most of China and Russia was inundated,

SOURCE OR PARALLEL	URANTIA PAPER 60
Europe. (Chamberlin & Salisbury 708)	
Progressive submergence was, indeed, one of the features of the period. In this respect, the North American and European continents are in harmony, but marine formations are much more extended in Europe (C&S 708).	but the water invasion was greatest in Europe.
	It was during this submergence that
(3) The presence of lithographic stone (Solenhofen limestone of southern Germany). This stone is so fine and so even-grained, and at the same time so workable and so strong, that it has come into use the world over for lithographic purposes.	the beautiful lithographic stone of southern Germany was laid down,
The stone is also remarkable for the perfection of its fossils, including such delicate parts as the gauzy wings of insects (C&S 709).	those strata in which fossils, such as the most delicate wings of olden insects, are preserved as of but yesterday.
THE LIFE OF THE PERIOD (Chamberlin & Salisbury 710)	
The Land Life (Chamberlin & Salisbury 719)	
Vegetation. (Chamberlin & Salisbury 719)	
[contd] The land vegetation of the Jurassic was little more than a continuation and expansion of that of the late Triassic, with slow progress toward living types.	60:2.7 The flora of this age was much like that of the preceding.
Cycadeans, conifers, ferns, and equiseta were the leading plants, slightly more modernized than their Triassic ancestors, but not changed radically.	Ferns persisted,
The ... conifers showed the more notable modernization. They embraced yews, cypresses, arborvitas, and pines, all of which had a somewhat modern aspect, though all the species are extinct (C&S 719).	while conifers and pines became more and more like the present-day varieties.

SOURCE OR PARALLEL	URANTIA PAPER 60
FOREIGN JURASSIC (Chamberlin & Salisbury 708)	
Europe. (Chamberlin & Salisbury 708)	
(1) A considerable content of coal in some places, notably Hungary (C&S 709).	Some coal was still being formed along the northern Mediterranean shores.
Climate. (Chamberlin & Salisbury 710)	
	60:2.8 The return of the seas improved the weather.
In Europe, corals lived 3,000 miles north of their present limit, and saurians and ammonites flourished within the Arctic circle (C&S 710).	Corals spread to European waters,
The testimony of fossils gathered in various parts of the world is to the effect that the climate of the Jurassic period was genial (C&S 710).	testifying that the climate was still mild and even,
Corals are unknown in the deposits of the great Arctic belt of Upper Jura ... (C&S 710).	but they never again appeared in the slowly cooling polar seas.
THE LIFE OF THE PERIOD (Chamberlin & Salisbury 710)	
The Marine Life (Chamberlin & Salisbury 711)	
	The marine life of these times improved and developed greatly,
The faunal progress is less well revealed in North American than in Europe and Asia, and the following general sketch of the life is based, in part, on the fossils of these continents (C&S 711).	especially in European waters.

SOURCE OR PARALLEL	URANTIA PAPER 60
[contd] The great features of the marine life of the period lay in (1) the continued dominance of the ammonites among the invertebrates, (2) the rise of the belemnites, (3) the abundance and modernization of pelecypods, (4) the rejuvenation of corals and crinoids, (5) the marked development of sea-urchins, (6) the introduction of crabs and modern types of crustaceans, (7) the prevalence of foraminifera, radiolarians, and sponges, (8) the change in the aspect of the fishes, and (9) the great sea-serpents, descended from the land-reptiles of the Trias (C&S 711).	Both corals and crinoids temporarily appeared in larger numbers than heretofore, but the ammonites dominated the invertebrate life of the oceans,
XXXVII: AMMONITES AND SQUIDS (Schuchert 528)	
Ammonites (Schuchert 528)	
Probably the average size would be between 3 and 4 inches, although they may range up to diameters of 8 feet (*Pachydiscus seppenradensis* of the Upper Cretaceous of Germany), and if the coiled tube in such large ones were straightened out, the length would be between 20 and 35 feet (S 528).	their average size ranging from three to four inches, though one species attained a diameter of eight feet.
XXIV: THE JURASSIC PERIOD (Chamberlin & Salisbury 702)	
THE LIFE OF THE PERIOD (Chamberlin & Salisbury 710)	
The Marine Life (Chamberlin & Salisbury 711)	
(7) Sponges and foraminifera were prolific and are well preserved (C&S 716).	Sponges were everywhere,
(2) ... The first known cuttle-fishes (sepeoids) also appeared at this time (C&S 711-12).	and both cuttlefish

SOURCE OR PARALLEL	URANTIA PAPER 60
(3) Pelecypods flourished during the period (Fig. 483), and took on a markedly modern aspect, the oyster family taking the lead (C&S 712).	and oysters continued to evolve.
	60:2.9 *110,000,000* years ago the potentials of marine life were continuing to unfold.
(5) The slow evolution of the sea-urchins in the Paleozoic era was succeeded in the late Trias by the beginning of a rapid evolution, which reached its climax in the early Tertiary (C&S 715).	The sea urchin was one of the outstanding mutations of this epoch.
[contd] (6) The Paleozoic crustaceans ... had been succeeded by the decapods which rose to a moderate and prolonged ascendancy. The prawns and lobsters (*Macrura,* long-tailed decapods) were the earlier division, and the most numerous in this period; but the first of the known crabs (*Brachyura,* short-tailed decapods) appeared before the period was past (C&S 715).	Crabs, lobsters, and the modern types of crustaceans matured.
(8) A marked change in the aspect of the fishes had set in during the Trias, and was carried farther in this period.	Marked changes occurred in the fish family,
[T]he forebears of the living garpikes and sturgeons took precedence in numbers, the forerunners of the modern *Amia* (Fig. 488) were important, and the initial forms of the bony fishes (teleosts), the dominant existing type, made their appearance (C&S 716).	a sturgeon type first appearing,
	but the ferocious[6] sea serpents, descended from the land reptiles, still infested all the seas,

(9) It was noted under the Trias that certain land-reptiles went down to sea, and introduced a new phase of vertebrate mastery over the deep. Though doubtless suffering from the new dynasty, it appears that the fishes continued in notable abundance and variety (C&S 716).

and they threatened the destruction of the entire fish family.

60:2.10 This continued to be, pre-eminently, the age of the dinosaurs.

[Before the close of the [Triassic] period both branches of the reptilian tribe sent delegations to sea, the one represented by the *ichthyosaurs* (Fig. 489) and the other by the *plesiosaurs* (C&S 694).]

They so overran the land that two species had taken to the water for sustenance during the preceding period of sea encroachment.

XXIII: THE RISE OF FISHES AND THE PROPHECY OF VERTEBRATE DOMINANCE (Schuchert 289)

Origin of Double Breathing in Fishes (Schuchert 303)

Higher Mentality among Land-living Vertebrates. (Schuchert 304)

They represent an adaptation in the wrong direction, that is, to an easier life, for the highest mentality has been developed only on the land where the struggle for existence is greatest because of the constant necessity of adaptation to changing environment (S 304-05).

These sea serpents represent a backward step in evolution.

While some new species are progressing, certain strains remain stationary and others gravitate backward, reverting to a former state. And this is what happened when these two types of reptiles forsook the land.

60:2.11 As time passed, the sea serpents grew to such size that they became very sluggish and eventually perished because they did not have brains large enough to afford protection for their immense bodies.

SOURCE OR PARALLEL	URANTIA PAPER 60
XXIV: THE JURASSIC PERIOD (Chamberlin & Salisbury 702)	
THE LIFE OF THE PERIOD (Chamberlin & Salisbury 710)	
The Marine Life (Chamberlin & Salisbury 711)	
	Their brains weighed less than two ounces notwithstanding the fact that
There were small as well as large forms of ichthyosaurs,	these huge ichthyosaurs sometimes grew to be fifty feet long,
some exceeding 30 feet in length (C&S 716).	the majority being over thirty-five feet in length.
Marine *crocodilians* made their appearance in the later part of the period.	The marine crocodilians were also a reversion from the land type of reptile,
[[The ichthyosaurs developed] a viviparous habit that freed them from the necessity of returning to land to deposit their eggs ... (C&S 716).]	but unlike the sea serpents,
They had undergone a remarkable adaptation to the sea (Fig. 491).... The hind limbs were modified but slightly from the land type, perhaps due to the recurring necessity of visiting the shores for depositing and hatching their eggs (C&S 719).	these animals always returned to the land to lay their eggs.
The Land Life (Chamberlin & Salisbury 719)	
Animals. (Chamberlin & Salisbury 720)	
It has already been noted that crowding on the land may have led some land reptiles to take to the sea.	60:2.12 Soon after two species of dinosaurs migrated to the water in a futile attempt at self-preservation,
The same influence may have forced others to take to the air, thereby escaping the monsters of the swamps, jungles, and forests. Whatever the cause, a unique feature of the period was the development of *pterosaurs,* or flying reptiles (C&S 723).[7]	two other types were driven to the air by the bitter competition of life on land.

SOURCE OR PARALLEL	URANTIA PAPER 60
[A less bizarre, but really greater evolution, was the contemporaneous differentiation of true *birds*. The remote ancestors of the pterosaurs and the birds may have been closely allied, but there is no evidence that the birds are descended from pterosaurs (C&S 725).]	But these flying pterosaurs were not the ancestors of the true birds of subsequent ages.
With little doubt [the pterosaurs] sprang from some agile, hollow-boned saurian, more or less remotely akin to the slender, leaping dinosaurs (C&S 723).	They evolved from the hollow-boned leaping dinosaurs,
[*See* Fig. 495.—*Rhamphorynchus phyllurus,* a flying saurian. (C&S 723)]	and their wings were of batlike formation
The Jurassic pterosaurs were small, but their successors attained a wing-spread of nearly a score of feet (C&S 723).	with a spread of twenty to twenty-five feet.
	These ancient flying reptiles grew to be ten feet long,
[*Contrast:* The jaws [of the *Hesperornis* and *Ichthyornis,* two non-flying aquatic birds of the Cretaceous] were armed with teeth set in a groove in primitive saurian fashion, and, like the jaws of snakes, were separable so as to admit large prey. As these strange birds attained a length of six feet in some cases, they were doubtless formidable enemies to the sea life on which they chose to feed ... (C&S 767-68).	and they had separable jaws much like those of modern snakes.
	For a time these flying reptiles appeared to be a success, but they failed to evolve along lines which would enable them to survive as air navigators. They represent the nonsurviving strains of bird ancestry.
Turtles, which had lived elsewhere in the Middle Trias, made their first appearance in North America in the Morrison beds ... (C&S 722).	60:2.13 Turtles increased during this period, first appearing in North America.
	Their ancestors came over from Asia by way of the northern land bridge.

60:2.14 One hundred million years ago the reptilian age was drawing to a close.

[*Compare:* How much of what we term intelligence could such a creature possess? Probably just enough to have eaten when it was hungry, anything more being superfluous.... (Lucas.) (S 495)]

The dinosaurs, for all their enormous mass, were all but brainless animals, lacking the intelligence to provide sufficient food to nourish such enormous bodies.

And so did these sluggish land reptiles perish in ever-increasing numbers. Henceforth, evolution will follow the growth of brains, not physical bulk, and the development of brains will characterize each succeeding epoch of animal evolution and planetary progress.

60:2.15 This period, embracing the height and the beginning decline of the reptiles, extended nearly twenty-five million years and is known as the *Jurassic*.

3. THE CRETACEOUS STAGE THE FLOWERING-PLANT PERIOD THE AGE OF BIRDS

XXXVIII: THE LOWER CRETACEOUS, AND THE FIRST APPEARANCE OF FLOWERING PLANTS (ANGIOSPERMS) (Schuchert 534)

Chalk Deposits. (Schuchert 535)

[contd] Although chalk is not the dominant material of the Cretaceous, still, because of its conspicuous white color and its fine exposures in the cliffs along both sides of the English Channel (Anglo-Parisian basin), it gave the name to the great system of rocks following the Jurassic (S 535).

60:3.1 The great Cretaceous period derives its name from

[White chalk is ... composed in the main of entire or broken calcareous tests of floating or bottom-living Foraminifera (Fig.,below) and of parts of exceedingly small floating calcareous algæ ... (S 536).]

the predominance of the prolific chalk-making foraminifers in the seas.

Significant Things about the American Lower Cretaceous. (Schuchert 536)

The most notable facts about the Lower Cretaceous life in North America are the appearance of flowering plants, and the apparent great dearth of dinosaurs (S 538).

This period brings Urantia to near the end of the long reptilian dominance and witnesses the appearance of flowering plants

and bird life on land.

These are also the times of the termination of the westward and southward drift of the continents, accompanied by tremendous crustal deformations and concomitant widespread lava flows and great volcanic activities.

60:3.2 Near the close of the preceding geologic period much of the continental land was up above water, although as yet there were no mountain peaks. But as the continental land drift continued, it met with the first great obstruction on the deep floor of the Pacific. This contention of geologic forces gave impetus to the formation of the whole vast north and south mountain range extending from Alaska down through Mexico to Cape Horn.

60:3.3 This period thus becomes the *modern mountain-building stage* of geologic history. Prior to this time there were few mountain peaks, merely elevated land ridges of great width.

SOURCE OR PARALLEL	URANTIA PAPER 60
XXXV: THE JURASSIC PERIOD AND THE MANY KINDS OF REPTILES (Schuchert 499)	
Nevadian Disturbance. (Schuchert 509)	
[contd] Toward the close of the Jurassic the Pacific System (Sierra Nevadas, the Coast Range of California, and the Humboldt Range of Nevada; also the Cascade and Klamath mountains farther north) was elevated (S 509).	Now the Pacific coast range was beginning to elevate,
[*See* Plate 40.—Late Jurassic paleophysiography (S 511)]	but it was located seven hundred miles west of the present shore line.
While the Pacific border of North America was being folded, the earth-shell was also invaded by deep-seated igneous rocks (granodiorite) on a large scale. At the surface there were immense outpourings of lava, which are conspicuous in the present Sierra Nevadas (S 510).	The Sierras were beginning to form,
The *gold-bearing veins of quartz* in the rocks of the Sierra Nevadas have formed as a consequence of the upturning (S 510).	their gold-bearing quartz strata being the product of lava flows of this epoch.
[?]	In the eastern part of North America, Atlantic sea pressure was also working to cause land elevation.
XXV: THE COMANCHEAN (LOWER CRETACEOUS) PERIOD (Chamberlin & Salisbury 727)	
Introductory (Chamberlin & Salisbury 727)	
[contd] The history of the Cretaceous period, as formerly defined, was complex. At its beginning, the larger part of the North American continent was above the sea.	60:3.4 *100,000,000* years ago the North American continent and a part of Europe were well above water.

SOURCE OR PARALLEL	URANTIA PAPER 60
During its progress, the sequence of events in our continent was somewhat as follows: (1) A somewhat wide-spread warping of the continental surface,	The warping of the American continents continued,
	resulting in the metamorphosing of the South American Andes and in the gradual elevation of the western plains of North America.
resulting in extensive submergence in Mexico and Texas, and a lesser submergence along the Pacific coast (C&S 727).	Most of Mexico sank beneath the sea,
	and the southern Atlantic encroached on the eastern coast of South America, eventually reaching the present shore line.
[*Compare:* The first hint of the breaking up of [Gondwana Land] to form the medial Atlantic and the Indian oceans came with the Jurassic ... This breaking up of Gondwana was completed in Cretaceous time (S 510).]	The Atlantic and Indian Oceans were then about as they are today.
	60:3.5 *95,000,000* years ago the American and European land masses again began to sink.
(3) Later, the sea encroached upon the Atlantic and Gulf borders, extending somewhat beyond the non-marine formations of the earlier stage. It again covered Texas,	The southern seas commenced the invasion of North America
and presently extended northward over the Great Plains, probably to the Arctic Ocean.	and gradually extended northward to connect with the Arctic Ocean,
On the Pacific coast, too, the sea gained on the land. Few greater transgressions of the land by the ocean are recorded in the long history of the North American continent (C&S 727).	constituting the second greatest submergence of the continent.

SOURCE OR PARALLEL	URANTIA PAPER 60
It was succeeded by (4) a wide-spread withdrawal of the waters from the continent, leaving the land area nearly or quite as large as now (C&S 727).	When this sea finally withdrew, it left the continent about as it now is.
FORMATION AND PHYSICAL HISTORY (Chamberlin & Salisbury 728)	
The Atlantic and Gulf Border Regions (Chamberlin & Salisbury 728)	
Conditions of origin, and constitution. (Chamberlin & Salisbury 728)	
	Before this great submergence began,
[contd] By the beginning of the Comanchean period, both the Appalachian Mountains and the area of the present Piedmont Plateau had been degraded well toward base-level ... (C&S 728).	the eastern Appalachian highlands had been almost completely worn down to the water's level.
Beds of clay of such purity and magnitude are found in the Potomac series, that they have been extensively utilized, especially in New Jersey, for the manufacture of clay wares. The clay often shows little stratification, and is notable for its bright and variegated colors, black, white, yellow, purple, and red being not uncommon (C&S 730).	The many colored layers of pure clay now used for the manufacture of earthenware were laid down over the Atlantic coast regions during this age,
Thickness. (Chamberlin & Salisbury 731)	
[contd] The Potomac series rarely reaches a thickness of 700 feet. The Tuscaloosa series is about twice as great (C&S 731).	their average thickness being about 2,000 feet.
[?]	60:3.6 Great volcanic actions occurred south of the Alps

SOURCE OR PARALLEL	URANTIA PAPER 60
The Close of the Comanchean (Lower Cretaceous) period in North America (Chamberlin & Salisbury 735)	
Along some parts of the western coast, there was folding of the Lower Cretaceous beds, accompanied by volcanic activity, as in the southern Coast Range of California, while in other places the sea spread itself over areas which had been land (C&S 735).	and along the line of the present California coast-range mountains.
The sea was withdrawn from Texas, and the Comanchean system somewhat deformed and faulted; in Mexico the deformation of the system was notable (C&S 735).	The greatest crustal deformations in millions upon millions of years took place in Mexico.
THE LOWER CRETACEOUS IN OTHER CONTINENTS (Chamberlin & Salisbury 736)	
Europe. (Chamberlin & Salisbury 736)	
[contd] The deposits in some of the lakes, marshes, estuaries, and other lodgment basins which resulted from the geographic changes at the close of the Jurassic period in Europe, record the transition from that period to the early Cretaceous (C&S 736).	Great changes also occurred in Europe,
In Russia, it is difficult in many places, to define the upper limit of the Jurassic, so complete is the gradation into the (Lower) Cretaceous (C&S 736).	Russia,
Other continents. (Chamberlin & Salisbury 736)	
Lower Cretaceous formations of marine origin are wide-spread in Siberia, Japan, and the southern part of Asia ... (C&S 736).	Japan,
Marine Lower Cretaceous is wide-spread in the northern part of *South America,* but not elsewhere east of the Andes (C&S 737).	and southern South America.

SOURCE OR PARALLEL	URANTIA PAPER 60
Climate. (Chamberlin & Salisbury 737)	
[contd] In the aggregate, the known fossils of the Lower Cretaceous of America are not such as to indicate great diversity of climate.... ... On the whole, European fossils seem to afford better evidence of the existence of climatic zones than those of America (C&S 737).	The climate became increasingly diversified.
LIFE (Chamberlin & Salisbury 737)	
The introduction of angiosperms. (Chamberlin & Salisbury 738)	
[contd] The eastern and central America angiosperms, including both monocotyledons and dicotyledons, appeared early in the period,	60:3.7 *90,000,000* years ago the angiosperms emerged from these early Cretaceous seas
and developed so rapidly that by the beginning of the next period, they seem to have overrun the continent (C&S 738).	and soon overran the continents.
	These land plants *suddenly* appeared
Before the end of the period, figs, magnolias, tulip trees, laurels, cinnamon and other forms referred to modern genera, but not to modern species, had appeared (C&S 739).	along with fig trees, magnolias, and tulip trees.
XXXIX: UPPER CRETACEOUS TIME AND THE BIRTH OF THE ROCKY MOUNTAINS (Schuchert 554)	
PART II. CRUSTAL MOVEMENTS, CLIMATE, AND LIFE (Schuchert 567)	
Climate of Cretaceous Time (Schuchert 573)	
At the close of the Cretaceous in the "Laramie" of the Great Plains there continued to live fig and breadfruit trees and palms, indicating a climate as mild as that of to-day along the Gulf of Mexico (S 573-74).	Soon after this time fig trees, breadfruit trees, and palms overspread Europe and the western plains of North America.

SOURCE OR PARALLEL	URANTIA PAPER 60
XXV: THE COMANCHEAN (LOWER CRETACEOUS) PERIOD (Chamberlin & Salisbury 727)	
LIFE (Chamberlin & Salisbury 737)	
The land animals. (Chamberlin & Salisbury 739)	
[contd] The aspect of the vertebrate life was intermediate between that of the Jurassic and Upper Cretaceous, and, so far as it is known, has been sketched already (p. 720). Little is known of other forms of terrestrial animal life (C&S 739).	No new land animals appeared.
The marine faunas. (Chamberlin & Salisbury 740)	
	60:3.8 *85,000,000* years ago
[contd] Two very different marine faunas are found in North America, implying two distinct maritime provinces—that of the Mexican Gulf and that of the Pacific.... The decline of the boreal aspect of the western fauna may have been due to the closing of Bering Strait, thus shutting off cold currents from the Arctic (C&S 740).	[the][8] Bering Strait closed, shutting off the cooling waters of the northern seas.
	Theretofore the marine life of the Atlantic-Gulf waters and that of the Pacific Ocean had differed greatly, owing to the temperature variations of these two bodies of water, which now became uniform.

SOURCE OR PARALLEL	URANTIA PAPER 60
XXVI: THE CRETACEOUS PERIOD (Chamberlin & Salisbury 742)	
FORMATIONS AND PHYSICAL HISTORY (Chamberlin & Salisbury 742)	
The Atlantic Border Region (Chamberlin & Salisbury 742)	
The abundance of greensand marl, which is not a common formation outside the Cretaceous, in corresponding systems of different continents, is one of the many striking inter-continental resemblances (C&S 744).	60:3.9 The deposits of chalk and greensand marl give name to this period.
The Western Gulf Region (Chamberlin & Salisbury 746)	
	The sedimentations of these times are variegated,
Alternating beds of sand, shale, limestone, and marl, most of which are of marine origin, make up the system (C&S 746).	consisting of chalk, shale, sandstone, and small amounts of limestone,
The Dakota formation, 600 feet and less thick, is largely of sandstone, with some lignite, and is, for the most part, of non-marine origin (C&S 746).	together with inferior coal or lignite,
The Montana series is more largely clastic, and from it the oil of the Corsicana oil field of Texas is derived (C&S 746).	and in many regions they contain oil.
The Western Interior (Chamberlin & Salisbury 746)	
The Montana series. (Chamberlin & Salisbury 749)	
The thickness of the series is variable, and its maximum is great. From 8,700 feet in Colorado, it thins to 200 feet in some parts of the Black Hills (C&S 749).	These layers vary in thickness from 200 feet in some places to 10,000 feet in western North America
	and numerous European localities.

SOURCE OR PARALLEL	URANTIA PAPER 60
The Dakota formation. (Chamberlin & Salisbury 747)	
Along the east base of the Rocky Mountains, where the beds have been tilted, the less resistant formations associated with this sandstone have been removed or worn down, leaving the outcropping edges of this formation as ridges or "hogbacks" (Fig. 120) ... (C&S 747).	Along the eastern borders of the Rocky Mountains these deposits may be observed in the uptilted foothills.
[*Contrast:* Chalk is, however, by no means coextensive with the system, for it has little development outside of the Anglo-French area. The name "Cretaceous," therefore, *as generally used,* is as inappropriate as a name could well be, ... fitting only a relatively small area of the Upper (C&S 757).]	60:3.10 All over the world these strata are permeated with chalk,
The formation is an important source of water in the semi-arid plains. It takes in the water where it outcrops near the mountains and the water follows the beds down their dip to the eastward (C&S 747).	and these layers of porous semirock pick up water at upturned outcrops and convey it downward
	to furnish the water supply of much of the earth's present arid regions.
Close of the Period (Chamberlin & Salisbury 752)	
[contd] About the close of the Cretaceous period a series of disturbances was inaugurated on a scale which had not been equalled since the close of the Paleozoic era (C&S 752).	60:3.11 *80,000,000* years ago great disturbances occurred in the earth's crust.
	The western advance of the continental drift was coming to a standstill, and the enormous energy of the sluggish momentum of the hinter continental mass upcrumpled the Pacific shore line of both North and South America and initiated profound repercussional changes along the Pacific shores of Asia.

SOURCE OR PARALLEL	URANTIA PAPER 60
[On the whole we see that the Pacific basin is rather definitely framed by a single system of rugged mountains, 25,000 miles long.... The Circum-Pacific Belt, from Kamchatka to New Zealand, is not only continuous but likewise covers much more ground than appears merely from the areas marked with solid black (Daly 219).]	This circumpacific land elevation, which culminated in present-day mountain ranges, is more than twenty-five thousand miles long. And the upheavals attendant upon its birth were the greatest surface distortions to take place since life appeared on Urantia.
Igneous eruptions. (Chamberlin & Salisbury 755)	
During this period, great bodies of igneous rock, both extrusive and intrusive, were forced up. Eruptions occurred in other lands at about the same time (C&S 755).	The lava flows, both above and below ground, were extensive and widespread.
	60:3.12 *75,000,000* years ago marks the end of the continental drift.
Orogenic movements. (Chamberlin & Salisbury 753)	
[contd] The growth of mountains locally by folding was probably in progress in the closing stages of the Cretaceous period from Alaska on the north to Cape Horn on the south,—more than a quarter of the circumference of the earth (C&S 753).	From Alaska to Cape Horn the long Pacific coast mountain ranges were completed, but there were as yet few peaks.
	60:3.13 The backthrust of the halted continental drift continued the elevation of the western plains of North America,

SOURCE OR PARALLEL	URANTIA PAPER 60
General movements. (Chamberlin & Salisbury 753)	
At about the same time, the Appalachian Mountains, which had been reduced to a peneplain by this time, were bowed up again. This later movement was chiefly vertical, while the Permian deformation was primarily horizontal,—a folding movement (C&S 753).	while in the east the worn-down Appalachian Mountains of the Atlantic coast region were projected straight up, with little or no tilting.
	60:3.14 *70,000,000* years ago the crustal distortions connected with the maximum elevation of the Rocky Mountain region took place.
Faulting. (Chamberlin & Salisbury 755)	
In the Rocky Mountains of British Columbia, one overthrust fault has been located	A large segment of rock was overthrust fifteen miles at the surface in British Columbia;
which crowded the Cambrian rocks obliquely up over the Cretaceous. The horizontal displacement is estimated to be as much as seven miles, and the throw 15,000 feet.	here the Cambrian rocks are obliquely thrust out over the Cretaceous layers.
	On the eastern slope of the Rocky Mountains,
Near the national boundary, the displacement of what appears to be the same fault	near the Canadian border, there was another spectacular overthrust;
crowded the Proterozoic up over the Cretaceous by a movement of equal magnitude (Fig. 510) (C&S 755).	here may be found the prelife stone layers shoved out over the then recent Cretaceous deposits.

SOURCE OR PARALLEL	URANTIA PAPER 60
Igneous eruptions. (Chamberlin & Salisbury 755)	
[contd] The close of the Cretaceous was marked by the inauguration of a period of exceptional igneous activities [in North America], continuing far into the Tertiary.... Eruptions occurred in other lands at about the same time (C&S 755).	60:3.15 This was an age of volcanic activity all over the world,
	giving rise to numerous small isolated volcanic cones.
UPPER CRETACEOUS OF OTHER CONTINENTS (Chamberlin & Salisbury 755)	
Asia. (Chamberlin & Salisbury 757)	
	Submarine volcanoes broke out in
[contd] The submergence of Europe and North America at the beginning of the Upper Cretaceous finds its parallel in other continents. There are extensive areas of Hippurite limestone in south-western Asia ... The Himalayan regions seems to have been still beneath the sea, for Upper Cretaceous formations are found in the mountains at great elevations (C&S 757).	the submerged Himalayan region.
	Much of the rest of Asia, including Siberia, was also still under water.
Late in the Upper Cretaceous occurred the extensive lava-flows of the Deccan. These flows, 4,000 to 6,000 feet in thickness, cover an area of something like 200,000 square miles, and are perhaps the most stupendous outflows of lava recorded in the earth's history (C&S 758).	60:3.16 *65,000,000* years ago there occurred one of the greatest lava flows of all time.

SOURCE OR PARALLEL	URANTIA PAPER 60
[*Contrast:* In C&S's review of South America, Africa and Australia (pp. 758-59), only the Andean system (Chile and Peru) is said to have had great volcanic activity.]	The deposition layers of these and preceding lava flows are to be found all over the Americas, North and South Africa, Australia, and parts of Europe.
LIFE OF THE (UPPER) CRETACEOUS (Chamberlin & Salisbury 759)	
The Land Animals (Chamberlin & Salisbury 762)	
[contd] The terrestrial animals had the same general aspect as in the preceding period.	60:3.17 The land animals were little changed,
In Europe, where the sea made great inroads upon the land, there was some decline in their abundance, variety and proportions; but in America, the area of land was not small enough to restrain greatly the evolution of the reptiles (C&S 762).	but because of greater continental emergence, especially in North America, they rapidly multiplied.
	North America was the great field of the land-animal evolution of these times, most of Europe being under water.
UPPER CRETACEOUS OF OTHER CONTINENTS (Chamberlin & Salisbury 755)	
Climate. (Chamberlin & Salisbury 759)	
[contd] The climate of North America throughout most of the Cretaceous period seems to have been rather uniform and warm throughout a great range of latitude.	60:3.18 The climate was still warm and uniform.
In Greenland, Alaska, and Spitzbergen, the climatic conditions seem to have been similar to those in Virginia (C&S 759).	The arctic regions were enjoying weather much like that of the present climate in central and southern North America.
	60:3.19 Great plant-life evolution was taking place.

LIFE OF THE (UPPER) CRETACEOUS (Chamberlin & Salisbury 759)

The Land Plants (Chamberlin & Salisbury 759)

[contd] Angiosperms predominated in North America at the beginning of the Cretaceous, and during the period genera now living came to be numerous, giving the flora a modern aspect.

Among the land plants the angiosperms predominated,

Among the living genera of angiosperms that made their appearance were those which include the birch, beech, oak, walnut, sycamore, tulip-tree, laurel, cinnamon, maple, holly, sweet-gum, ivy, and oleander (C&S 759-61).

and many present-day trees first appeared, including beech, birch, oak, walnut, sycamore, maple,

Palms were plentiful, even in northerly latitudes, before the close of the period, and some of them were closely allied to existing palms.

and modern palms.

Of even more interest, because of their relations to the evolution of grazing animals, was the appearance of *grasses*, which do not, however, appear to have attained prominence until later (C&S 761).

Fruits, grasses, and cereals were abundant,

[contd] It is worthy to remark that the introduction of dicotyledons, the great bearers of fruits and nuts, and of monocotyledons, the greatest grain and fodder producers, was the groundwork for a profound evolution of herbivorous and frugiverous land animals, and these in turn, for the development of the animals that prey upon them (C&S 761).

and these seed-bearing grasses and trees were to the plant world what the ancestors of man were to the animal world—

they were second in evolutionary importance only to the appearance of man himself.

Suddenly and without previous gradation, the great family of flowering plants mutated.

SOURCE OR PARALLEL	URANTIA PAPER 60
The new flora spread widely (C&S 761).	And this new flora soon overspread the entire world.
The Land Animals (Chamberlin & Salisbury 762)	
	60:3.20 *60,000,000* years ago, though the land reptiles were on the decline,
The *dinosaurs* still retained the leading place among the land reptiles, though the carnivorous forms (*Theropoda*) were less abundant and varied than before.	the dinosaurs continued as monarchs of the land,
	the lead now being taken by the more agile and active types of
Among them was a leaping, kangaroo-like form (*Lœlaps* or *Dryptosaurus*) with a length of 15 feet.	the smaller leaping kangaroo varieties of the carnivorous dinosaurs.[9]
The most singular dinosaurian development was among the herbivorous branch,	But sometime previously there had appeared new types of the herbivorous dinosaurs,
	whose rapid increase was due to the appearance of the grass family of land plants.
some of which were very large, of quadrupedal habit,	One of these new grass-eating dinosaurs was a true quadruped
with enormous skulls which extended backwards over the neck and shoulders in a cape-like flange (Fig. 514). Added to this was a sharp, parrot-like beak, a stout horn on the nose, a pair of large pointed horns on the top of the head, and a row of projections around the edge of the cape (C&S 762).	having two horns and a capelike shoulder flange.[10]
Distinctively terrestrial *turtle* remains are found in the Dakota sandstone, and the fossils of species inhabiting fresh-waters have been found in the late Cretaceous (Belly River) deposits of Canada (C&S 762).	The land type of turtle, twenty feet across, appeared[11]

SOURCE OR PARALLEL	URANTIA PAPER 60
Among the *crocodiles,* the long-snouted teleosaurs persisted, in North America at least, until well into the Cretaceous; but for the most part the order underwent a marked change early in the period, developing into the modern type of crocodiles and gavials (C&S 764).	as did also the modern crocodile
Snakes made their first appearance, so far as known, in the later part of the period, but they were small (C&S 762).	and true snakes of the modern type.
The Sea Life (Chamberlin & Salisbury 765)	
Vertebrates. (Chamberlin & Salisbury 765)	
An important change took place in the *fish* of the sea, in the transfer of dominance from the older types to the *teleosts.* This change set in during the Comanchean, and was complete by the middle of the Cretaceous (C&S 768).	Great changes were also occurring among the fishes and other forms of marine life.
The Cretaceous birds include about 30 species belonging to two widely divergent orders, *Hesperornis* and *Ichthyornis*. The former (Fig. 520) were large, flightless, highly specialized divers, with aborted wings and remarkable legs. This implies that, following the evolution which had produced the wings, there had been a degenerative history long enough for them to dwindle almost to the point of extinction.... Apparently, walking as well as flying had been abandoned, and the organism was specialized for swimming and diving only (C&S 767).	60:3.21 The wading and swimming prebirds of earlier ages had not been a success in the air, nor had the flying dinosaurs. They were a short-lived species, soon becoming extinct. They, too, were subject to the dinosaur doom, destruction, because of having too little brain substance in comparison with body size.

SOURCE OR PARALLEL	URANTIA PAPER 60
	This second attempt to produce animals that could navigate the atmosphere failed,
The Land Animals (Chamberlin & Salisbury 762) The *mammals* thus far recovered from the Cretaceous indicate little advance upon those of the Jurassic. Mammals appear to have played a very inconspicuous part in the fauna of the period (C&S 765).	as did the abortive attempt to produce mammals during this and a preceding age.
	60:3.22 *55,000,000* years ago the evolutionary march was marked by the *sudden* appearance of
[*Note: See* 60:2.12, left column, re the *Archæopteryx* appearing in the Jurassic: A less bizarre, but really greater evolution, was the contemporaneous differentiation of true *birds*. The remote ancestors of the pterosaurs and the birds may have been closely allied, but there is no evidence that the birds are descended from pterosaurs (C&S 725).]	the first of the *true birds,*
[*Note:* The *Archæopteryx* is described by Schuchert (p. 583) as "about the size of a large pigeon". Chamberlin & Salisbury (p. 768) describe the late Cretaceous *Ichthyornis* as "scarcely larger than a pigeon". It is unclear which creature the UB is referring to.]	a small pigeonlike creature which was the ancestor of all bird life.
[?]	This was the third type of flying creature to appear on earth, and it sprang directly from the reptilian group, not from the contemporary flying dinosaurs nor from the earlier types of toothed land birds. And so this becomes known as the *age of birds* as well as the declining age of reptiles.

SOURCE OR PARALLEL	URANTIA PAPER 60
	4. THE END OF THE CHALK PERIOD
XXXIX: UPPER CRETACEOUS TIME AND THE BIRTH OF THE ROCKY MOUNTAINS (Schuchert 554)	
Significant Things About the Upper Cretaceous. (Schuchert 554)	
	60:4.1 The great Cretaceous period was drawing to a close, and its termination marks the end of
[contd] Upper Cretaceous time is known not only for its widely spread chalk deposits but as well for the great flooding of the continents by the oceans (S 554).	the great sea invasions of the continents.
XXXII: CLIMATES OF THE GEOLOGIC PAST, AND THE "CRITICAL TIMES" (Schuchert 438)	
Climates of Geologic Time (Schuchert 444)	
Periodic Marine Floodings. (Schuchert 446)	
The effect of these periodic floods must not be underestimated, for the North American continent, as has been said, was variably submerged at least seventeen times, and over areas variable between 150,000 and 4,000,000 square miles (S 446).	Particularly is this true of North America, where there had been just twenty-four great inundations.
	And though there were subsequent minor submergences, none of these can be compared with the extensive and lengthy marine invasions of this and previous ages.

SOURCE OR PARALLEL	URANTIA PAPER 60
	These alternate periods of land and sea dominance have occurred in million-year cycles. There has been an agelong rhythm associated with this rise and fall of ocean floor and continental land levels. And these same rhythmical crustal movements will continue from this time on throughout the earth's history but with diminishing frequency and extent.
	60:4.2 This period also witnesses the end of the continental drift and the building of the modern mountains of Urantia. But the pressure of the continental masses and the thwarted momentum of their agelong drift are not the exclusive influences in mountain building.
XV: MOUNTAIN RANGES: THEIR ORIGIN AND HISTORY (Pirsson 373)	
Folded Mountain Ranges (Pirsson 378)	
Preparation for the Future Range. (Pirsson 380)	
The preliminary structure, then, which determines the place of the future range, is a subsiding trough	The chief and underlying factor in determining the location of a mountain range is the pre-existent lowland, or trough,
into which sediments are deposited from a neighboring land, or lands undergoing erosion, until a great thickness has accumulated (P 380).	which has become filled up with the comparatively lighter deposits of the land erosion and marine drifts of the preceding ages.
[T]he whole accumulated mass of strata may be 20,000 feet in thickness, or even more ... (P 380).	These lighter areas of land are sometimes 15,000 to 20,000 feet thick;

SOURCE OR PARALLEL	URANTIA PAPER 60
Orogenic Period and the Forces Involved (Pirsson 382)	
[contd] The period of relatively quiet preparation ... gives way to a more active one in which the earth's outer shell yields to pressure	therefore, when the crust is subjected to pressure from any cause,
which displays itself by enormous thrusting in a lateral direction, tangential to the earth surface. By this thrusting the accumulated load of sediments is thrown into folds, crushed and mashed together, so that the thickened mass rises and the mountain range is made (P 382).	these lighter areas are the first to crumple up, fold, and rise upward
	to afford compensatory adjustment for the contending and conflicting forces and pressures at work in the earth's crust or underneath the crust.
	Sometimes these upthrusts of land occur without folding. But in connection with the rise of the Rocky Mountains, great folding and tilting occurred, coupled with enormous overthrusts of the various layers, both underground and at the surface.
VI: MOUNTAIN RANGES (Daly 211)	
Still older than the Appalachians or Hercynians, is a mountain belt, the wrecked fragments of which appear in north Scotland and along the western slope of the Scandinavian Peninsula. Probably the belt really continues to Spitzbergen and curves around to form the islands which are situated north and northwest of Greenland. This zone of deformation has been called the *Caledonian* system of mountain structure (D 241).	60:4.3 The oldest mountains of the world are located in Asia, Greenland, and northern Europe among those of the older east-west systems.

SOURCE OR PARALLEL	URANTIA PAPER 60
The second master system is the Circum-Pacific Belt, more than twice as long as the Mediterranean Belt. The enormous mountain girdle of the Pacific was clearly due to forces directed from the continents toward the Pacific basin (D 248).	The mid-age mountains are in the circumpacific group
The east-west Mediterranean Belt of young, high mountains is confined to the northern hemisphere (D 248).	and in the second European east-west system,
	which was born at about the same time.
This Old World band of rugged mountains, 10,000 miles long, has been built well within the boundaries of the Eurasian continent....	This gigantic uprising is almost ten thousand miles long,
Of closely similar structure and age are the mountains of the West Indies, southern Mexico, central Mexico, and northern Venezuela. These ranges together form a broad east-west system, lying between two major masses of land, North America and South America; it is the *American Mediterranean Rugged Belt* (D 217-18).	
[!]	extending from Europe over into the West Indies land elevations.
[*Note:* Daly includes the Rocky Mountain system in the Circum-Pacific Belt.]	The youngest mountains are in the Rocky Mountain system, where, for ages, land elevations had occurred only to be successively covered by the sea, though some of the higher lands remained as islands. Subsequent to the formation of the mid-age mountains, a real mountain highland was elevated which was destined, subsequently, to be carved into the present Rocky Mountains by the combined artistry of nature's elements.

SOURCE OR PARALLEL	URANTIA PAPER 60
X: THE CHANGING ASPECT OF NORTH AMERICA, OR THE GEOSYNCLINES, BORDERLANDS, AND GEANTICLINES (Schuchert 135)	
Geanticlines (Schuchert 140)	
	60:4.4 The present North American Rocky Mountain region is not the original elevation of land;
The *Ancestral Rocky Mountains* geanticline described by Lee arose late in the Paleozoic across eastern Colorado and New Mexico, western Kansas and Oklahoma, and northwestern Texas.... These mountains were base-leveled in early Jurassic time, since late in this period and during the Cretaceous the Rocky Mountain sea completely transgressed the roots of this geanticline.	that elevation had been long since leveled by erosion
	and then re-elevated.
A part of it is the present reëlevated Front Range (Long's and Pike's peaks) of Colorado (S 142).	The present front range of mountains is what is left of the remains of the original range which was re-elevated.
	Pikes Peak and Longs Peak are outstanding examples of this mountain activity, extending over two or more generations of mountain lives. These two peaks held their heads above water during several of the preceding inundations.
	60:4.5 Biologically as well as geologically this was an eventful and active age on land and under water.

SOURCE OR PARALLEL	URANTIA PAPER 60
XXVI: THE CRETACEOUS PERIOD (Chamberlin & Salisbury 742)	
LIFE OF THE (UPPER) CRETACEOUS (Chamberlin & Salisbury 759)	
The Sea Life (Chamberlin & Salisbury 765)	
Invertebrates. (Chamberlin & Salisbury 768)	
Sea-urchins were quite abundant, and lent one of its characteristic aspects to the fauna,	Sea urchins increased
while *corals* and *crinoids,* so long associated with clear seas, were not abundant (C&S 770-71).	while corals and crinoids decreased.
Cephalopods were still abundant, though ammonites were in their decline and were showing erratic divergencies of form, attended by excessive ornamentation, comparable to that which marked corresponding stages of the trilobites and crinoids (C&S 771).	The ammonites, of preponderant influence during a previous age, also rapidly declined.
The Land Plants (Chamberlin & Salisbury 759)	
	On land the fern forests were largely replaced by
Among the gymnosperms, there was a notable development of the sequoias, which now include the giant trees of California. The modern *Cycas* was present ... Worthy of special note was the presence of genera in Europe and the United States which are now confined to the southern hemisphere, as *Podocarpus,* the leading pine of the southern hemisphere (C&S 761).	pine and other modern trees, including the gigantic redwoods.

SOURCE OR PARALLEL	URANTIA PAPER 60
[*Contrast:* The upwelling of the highest mammals, the Placentalia, also came later in the Mesozoic out of primitive insectivores (S 616).]	By the end of this period, while the placental mammal has not yet evolved,
	the biologic stage is fully set for the appearance, in a subsequent age, of the early ancestors of the future mammalian types.
	60:4.6 And thus ends a long era of world evolution, extending from the early appearance of land life down to the more recent times of the immediate ancestors of the human species and its collateral branches. This, the *Cretaceous* age, covers fifty million years and brings to a close the premammalian era of land life, which extends over a period of one hundred million years and is known as the *Mesozoic.*
	60:4.7 [Presented by a Life Carrier of Nebadon assigned to Satania and now functioning on Urantia.]

1. From northern Virginia to Nova Scotia the Newark sandstones and mudstones are prevailingly red in color and consist almost throughout of conglomerates, sandstones, and shales (S 461).

2. The Trias of the central Apennines, where the limestone has since been metamorphosed, is the source of the beautiful white Carrara marble which has played such an important part in the development of Roman and Italian architecture and sculpturing (C&M 666-67).

3. *Contrast:* The bipedal dinosaurs did not leap like a kangaroo, however, but ran like an ostrich. The nature of their abundant tracks makes that fact quite certain (S&D 311).

Chamberlin & MacClintock removed the reference to "kangaroo-like attitude", rewording Chamberlin & Salisbury thus: "The striking development of the hinder parts, the relative weakness of the fore limbs, and the semi-erect posture are the most obvious features" (C&M 671).

4. *Note:* This is the same rich marine life referred to in 60:1.8.

5. *Compare:* The system is known in *New Zealand, Borneo,* and *Australia,* and is well developed in *Mexico, Peru,* the *Bolivian Andes, Chile,* and *Argentina* (C&S 709).

6. *Note:* C&S call the sea serpents "voracious"; the UB calls them "ferocious".

7. *C&S continue:* Appearing at the very close of the Trias in a few yet imperfectly known forms, they ... later formed a diversified group embracing long-tailed (as *Rhamphorhynchus,* Fig. 495) and short-tailed forms (as Pterodactylus, Fig. 496) (C&S 723).

8. From the Text Standardization report (http://www.urantia.org/urantia-book/text-standardization#U60_3_8):

60:3.8
First printing: 85,000,000 years ago Bering Strait closed,...
Changed to: 85,000,000 years ago the Bering Strait closed,... — Though the construction without "the" seems stilted in today's usage, the 11th edition of the *Encyclopaedia Britannica* illustrates that in the early years of the 20th century, it was quite acceptable to use "Bering Strait" without the article "the." The committee determined that even though the usage was correct when The Urantia Book was written, it is now so unfamiliar that the insertion of "the" is justified here and at 61:0.2 and 61:3.4 in the text.

My comment: The "the" should not have been deleted, because the author of Paper 60 was drawing from Chamberlin & Salisbury and deliberately wrote 'Bering Strait'.

9. The 1930 revised edition of Chamberlin & Salisbury's book deleted the reference to the "leaping, kangaroo-like form".

10. *Note:* Fig. 514 is captioned: *Triceratops prorsus* Marsh, from the Laramie Cretaceous. (From a painting by C. R. Knight in the U. S. National Musuem.)

In 2010 some paleontologists asserted that *Triceratops* was not a separate species but rather an pre-adult *Torosaurus.*

http://news.nationalpost.com/news/triceratops-never-actually-existed-scientists-say

11. *Compare:* Marine turtles were fully twelve feet across (C 766).

Over the turtle remains found in the Dakota sandstone: http://oceansofkansas.com/Parmenter1899.html