Questions for study VIII
(be prepared to discuss Tuesday, May 23, and turn in these questions thereafter)

Ward and Brownlee, The Life and Death of the Planet Earth

1. (pages 69 and 70) One thing nice about having a book written by local authors is that their examples are drawn from the local geography. The authors state “But can we be sure that there were so recently thick walls of ice over huge land areas? The signs near our home are everywhere once you know what to look for.... The linear hills, lakes and fjords that run north and south.” Clearly they are speaking of local geographical features. Give one local example of a linear hill, a lake and a fjord that runs (is oriented) north/south. What does this geographical directionality imply about the direction the ice was moving?

2. (page 74) Glaciers did not and do not really crawl “southward”. This is a trick question, but in what direction do glaciers move? Puget Sound is shallower the further south you go (like from the San Juan Islands to Olympia), yet we have evidence that the Puget Sound Lobe Glacier did move southward; how could this happen?

3. (page 76) The authors exaggerate here; it is not true that “the severity and size of the glaciers produced during each cycle has been increasing through time.” In fact, there is ample evidence that the last (Wisconsinian) glaciation was not as severe as some earlier glaciations; find an example that a pre-Wisconsinian glaciation was more severe or more large in extent, and cite your source.

4. (pages 80 and 81) What three variable factors of the Earth’s orbit seem to explain the cycle of glacial/interglacial periods. List each factor, and give the condition of each that would yield the greatest chance of entering a glacial period. To help you, I’ve started a table below; fill in the rest of it.

<table>
<thead>
<tr>
<th>Variable factor of Earth’s orbit</th>
<th>Condition which will make ice age more likely</th>
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<tr>
<td>The shape of the Earth’s orbit around the Sun</td>
<td>More elliptical</td>
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5. (page 84) The Gulf Stream is a warm-water surface ocean current that the authors point out allows western Europe to be more agriculturally productive than it should be,
given its latitude. The Gulf Stream originates in the Gulf of Mexico, a pool of very warm
ocean water. How would a large amount of glacial meltwater coming down the
Mississippi River from the front of the advancing North American continental glacier
affect the climate of western Europe? Hint: If you’ve seen the movie *The Day After
Tomorrow*, that may help.

6. (whole chapter) What level of “endings” do the authors suppose the coming of the
next glaciation will represent? End of civilization? End of the human species? End of the
Earth?

7. (pages 87 and 94) Let’s get this out of the way. Using whatever reference you can find
it in, give the **numerical range of years** of the *Paleozoic* Era, the *Mesozoic* Era and the
*Cenozoic* Era. **Please cite the reference.** Echoing an earlier question, how are the
boundaries between the eras defined?

8. (page 94) What do the authors suggest is (are) the reasons that the formation of a
supercontinent will cause a disruption in life cycles?

9. (pages 96 and 97) What is a *Wilson Cycle*, and how long is one? This implies that
there were supercontinents prior to Pangaea. Using any reference you like (you don’t
have to cite this one), determine how many **pre-Pangaea supercontinents** we have
evidence for, and give their **names**, if known.

10. (whole chapter) What level of “endings” do the authors suppose the coming of the
next supercontinent will represent? End of civilization? End of the human species? End
of the Earth?