MOUNTAIN RANGE FORMATION

The last paper may provide some deeper insight into mountain range formation that contemporary theory does not provide. To be specific, *if* that paper augments our knowledge of the formation of the lithosphere (as well as certain ramifications of that formation), then we may be able to enhance our comprehension of the formation of mountain ranges.

There should be immediate qualification of which type of mountain ranges will be addressed in the course of this paper. This paper will not deal with mountain ranges in general. What will specifically be addressed are the mountain range formations on the North and South American west coasts as the tenets espoused herein are applicable to those specific geographic areas. To some extent, these concepts will be applicable to other mountain ranges in the world (this will be dealt with towards the end of the paper). However, this paper will not be germane to the Himalayan mountains. These concepts do not seem to apply to that area. However, this anomaly does not render this paper invalid. The Himalayan mountains are the youngest of mountain chains. Presumably, we would either greatly modify what's being delineated here, or develop a new model for the explanation of the Himalayas.

It is postulated that this formation transpired at a relatively early stage in lithospheric formation. The basis for this statement is as follows. Mountain ranges are ubiquitous on the North and South American west coast. Given this ubiquitous nature, what reasonable postulations can be presented as constituting prerequisites for the establishment of these formations? Firstly, there would have been an inordinate level of "violent" activity *throughout* this geographic area ("violent" activity obviously pertains to geological processes). The second prerequisite would constitute an adjunct to the first. A substantial amount of energy would have to present in order to effect these geological processes. The specific meaning of this, is that the lithosphere could not have completely (or for that matter, predominantly) made the transition from a molten state to a solidified state for these mountain ranges to form. In other words, although solids do constitute a form of energy ($E=mc^2$), a completely solid lithosphere could not have culminated in mountain range formation. However, the precursor to the existing land masses (an entity which was partially solidified, but still largely comprised of energetic molten material), would have fallen within the requisite parameters for the establishment of mountain ranges. Once again, the next prerequisite is an adjunct to the previously stated tenet. Given the wide spread nature of these formations, it would be reasonable to hypothesize that the structure of the early lithosphere was conducive to these formations. If it was not conducive to mountain range formation, it is unlikely that the formations would have been so wide spread.

What theory can be presented which falls within these designated parameters? Specifically, (i) "violent" geological processes; (ii) a substantial amount of energy; (iii) and a lithosphere which was conducive to this formation. (It goes without saying that other readers may be able to develop other prerequisites which were necessary for mountain range formation. However, what I've theorized here will suffice to enable the forging of a scientific theory.)

It would be fairly obvious that all of this must have transpired at a relatively early stage of lithosphere formation. In "one fell swoop" this would explain the three prerequisites. If there was still a great deal of molten material, it would have been conducive to mountain range formation throughout the west coast, there would have been a substantial amount of free energy, and under the right circumstances, "violent" geological processes would have been induced. Although the broad statement is that it transpired at an early stage of lithosphere formation, what would entail a more precise explanation?

Evidently, the material could not have been predominantly comprised of molten material. If this had been the situation, there would be insufficient cohesiveness to maintain even one mountain (let alone mountain ranges) when they initially developed. To develop a precise quantitative analysis of what percentage of the early lithosphere would have been solid, and what percentage would be comprised of molten material requires empirical data which we would be lacking. Therefore, we are, regrettably, left with vague statements for the development of this theory.

The surface of the lithosphere would have been predominantly solid for the sake of the cohesiveness of the ranges which developed. However, beneath the surface, there would still have been a substantial amount of molten material/energy. When the mountain ranges formed, they must have been the result of converging boundaries. Neither diverging boundaries, nor shear boundaries would have induced the requisite "upswelling" of the solidified surface to enable the development of mountains. Furthermore, since this is a phenomenon which is common on the North/South American west coasts, it is not unreasonable to postulate that it transpired at (approximately) the same time. In other words, would hundreds of years have separated the formation of mountain ranges in British Columbia and, as an example, formation in California? The probable answer is no. This is for the simple reason that this paper has outlined the existence of certain prerequisites to ensure mountain range formation. If there had been a substantial time delay between formation in one part of the west coast and another, the prerequisites would not have been in effect throughout the west coast.

This now brings to the fore another question. Many of the world's mountain ranges have formed on the coasts of the respective continents. Since the prerequisites for mountain range formation would have been in effect throughout the continent, why did mountain range formation prevail upon the coasts of many continents? This would presuppose the following. Between various plates, there would have to be a sufficient amount of "room" (free space) to enable substantial movement to transpire. Plates which were land locked wouldn't possess the requisite freedom of movement. In order to achieve mountain range formation, this particular system would have to oscillate between convergent and divergent boundaries. "Simple" convergent boundaries wouldn't have sufficed. To be more precise, it would not have been a question of plates merely moving towards each other. It would have been a question of the plates moving together with considerable force/velocity. How would a designated amount of force/velocity be achieved? If the plates were at a considerable distance from each other (via diverging boundaries), when they proceeded to move towards each other (via a modification of the direction of the internal energy they were subjected to), the increased distance over which they travelled would have imbued them with a greater velocity. At some stage in the past, the following would have transpired. When a diverging boundary was in effect, the distance (at one point in time) between plates may have been considerable. When a converging boundary took effect, the greater distance over which they travelled imparted them with sufficient velocity that when they collided, there would have been a substantial "upswelling" of the lithosphere's surface, as to culminate in mountain range formation.

An obvious anomaly of the last paragraph pertains to why this effect predominantly took place on one side of the continent. In principle, it should have transpired on both coasts of the continent. The reader should be forewarned that you may not "like" the answer that will be proposed as, initially, it would seem to be too far fetched. However, once the concept is presented, there will be the attempt to fortify it via an argument that was presented in a previous paper.

The postulate as to why mountain range formation was confined to one side of the continent will be explained as follows. As previously stated, the converging boundaries would have been moving towards each other with a considerable amount of force/energy. This substantive energy would have culminated in (loosely speaking) "destruction". This primary (but not exclusive) "destruction" would have culminated in mountain range formation. (This would be in contrast to a smooth surface.) However, this would not be the only type of "destruction" to take effect. When the early lithosphere was initially formed, the physical area that would eventually become the west coast of the North/South American continents may have been more extensive. When certain continental plates moved towards each other, they moved with such force that the physical area which was in the Western most area would have fallen into the ocean. (A superficial modern day analogy would pertain to a devastating earthquake in California causing a part of the state to fall into the ocean.) The precise rational behind this is as follows. Although the continents fall within the parameters of a single mass, they are, nevertheless, comprised of various plates. When, at the time of mountain formation, the plates that were at the Western most coast moved towards the other plates, there would have been smaller masses moving against the mass of the entire continent. Although this would have been sufficient to induce mountain range formation, the plates on the Western most coast would have fallen into the ocean. This is for the simple reason that these smaller masses would have absorbed a substantial amount of energy from the collision. Due to their smaller mass *and* there being no plates on their Western side to "keep them in place", they would have fallen into the ocean.

It was previously stated that the reader may be opposed to this concept. One reason for your potential opposition is that there is no mean to procure evidence in support of this. Although this may be true, there is one particular fact which may support the concept just outlined. That concept being, continents in the past having greater physical area than in the modern day, yet that physical area "vanished".

I would once again point to the argument that was presented in my paper on plate tectonics in the latter part of that paper. As a result of the arguments presented there, the aborigines of Australia simply could not have travelled there by boat. They *must* have walked there. That means that the isthmus (or possibly other land mass) which connected Australia to other land masses must have subsequently vanished as the earth continued to evolve. The reader must recognize that it was simply impossible for the aborigines to have travelled there by boat. The only viable conclusion is that they walked there. Given this reality, we are in possession of grounds for stating that parts of land masses may have "vanished" in the past.

As stated towards the beginning of the paper, the formation of some of the other mountain ranges in the world will be addressed via these concepts. Let's take the mountain ranges in Africa, the South American east coast, and eastern Canada. Since mountain ranges are not as extensive in these areas, the obvious implication of this is that there wasn't as much energy present in these specific areas at the time of mountain range formation. However, if we take the example of South America, the composition of this continent would have been consistent throughout. Consequently, what would explain the lack of energy on the east coast to prevent extensive formation of mountain ranges?

It was previously stated that there were smaller plates throughout the western of North/South America which fell into the ocean when mountain ranges were formed in these areas. In other geographic areas, similar types of plates may have been in existence. However, they did not prevail *throughout* the entire coast as (may have been the case) with the North/South American west coasts. If this was the situation, then we would see the geographic situation that we witness today. Namely, the presence of sporadic mountain ranges which are not wide spread in scope.