

So, Waisgerber et al. disregard the existence of these preserved erosional features, and concentrate on the parts of the Canyon in which such distinctive features are not found. They are thus using the illogical and ungeologic assumption that, in order for erosional features to be meaningful, they must be found preserved at all places where the contrasting formations are now in contact.

One should not expect to find the same kinds of erosional marks on every square kilometer of an area which has been, or is being eroded. The environmental conditions and the uniformity or non-uniformity of the rock layers being eroded contribute to the end result of the erosion process, and sometimes a part of the eroded surface is left relatively smooth. Another principle which we need to keep in mind is that the ancient erosion features of which we are speaking were able to be preserved because they were cut--with abrupt angles--into lithified rock before being filled in with contrasting sediments, which lithified later.

5. If any of the observations made by Waisgerber et al. are actually new, and if those observations were of a nature such as to cast doubt upon the existing evidences for either the unconformity between the Redwall Ls and the Temple Butte Ls or between the former and the Muav Ls, then one or more of the major geological journals would have been very interested in publishing the report of their work; and it should have been submitted to those journals. Such journals do frequently publish articles that challenge identifications of particular strata and their associated features which have been accepted up to the present time.

However, it does not appear that Waisgerber and his associates have discovered much new material concerning the difficulties of identifying the strata at the North Kaibab Trail which has not already been published in the literature cited by them.

6. Since the primary purpose of Waisgerber and his associates was evidently to find evidence indicating that at least all of the Cambrian and younger rock systems of the Grand Canyon area were laid down within a short period of time, some additional questions arise:

(a) Why are these authors disregarding the several well-known erosional unconformities which lie at levels above the base of the Redwall Limestone? See p. 26-27 and 36 of the enclosed pages for a brief description and documentation of the definite, preserved erosional features which lie within and at the top of the Redwall Limestone formation. The ancient, karst erosion surface which exists all across the top of the Redwall Limestone is so thoroughly known and has been so carefully described that it is absurd for anyone to try to ignore it. This erosion surface contains many unmistakable, ancient solution cavities, erosion channels, and blocky knolls which were formed before the (very different, non-marine) Supai Formation filled the cavities and channels and buried the knolls--some of which are 40 feet in height.

(b) Why have the authors disregarded the time necessary for forming the internal features of the Redwall Limestone itself? We need to keep in mind that the real, intrinsic characteristics of geologic formations are very often much more revealing of how long it took to deposit them than are the positions of the formations in relation to other strata. See p. 28 of the enclosed pages regarding these intrinsic characteristics of the Redwall Limestone. Also, in my God's Time-Records in Ancient Sediments, Crystal Press, 1977, I included on p. 140 and 142 considerably more specific information concerning the internal nature of this