passive folds, the amplitude of which has been enhanced by pressure-solution along surfaces parallel to the axial plane - along the so-called "slip planes". Geometrical reconstructions allowing for equally distributed pressure-solution create intriguing final fold geometries.

One can propose a sequence of various pressure-solution surfaces that extends from diagenetic styolites to slaty cleavage. This sequence corresponds generally to increasing strain and temperature. In fact, most regionally metamorphosed rocks can be viewed as representing the ultimate in pressure-solution - a continuum of minerals crystallizing and recrystallizing under the influence of directed pressure in a manner that is pervasive throughout the entire rock mass.

This paper attempts to call attention to the importance of pressure-solution in geologic deformation by reviewing observations of others, by summarizing results available from my current projects, and by proposing several hypotheses that possess merit and provide a good basis for discussion.

THE TIBETAN PLATEAU: ITS SIGNIFICANCE FOR TECTONICS AND PETROLOGY

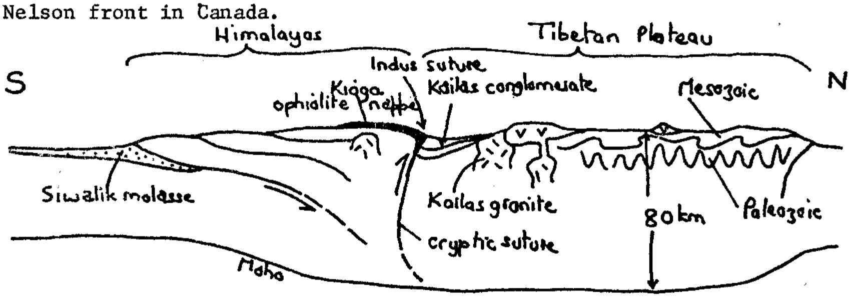
Burke, Kevin C., Dewey, J. F., and Kidd, W.S.F., Department of Geological Sciences, State University of New York at Albany, 1400 Washington Avenue, Albany, New York 12222

The Tibetan plateau is the largest area (>$10^6 km^2$) of great height (~ 5 km ASL) on earth. Using ERTS and other satellite images and published accounts of the geology, we have compiled a new geologic map of part of the plateau. Basement consists of a Precambrian(?) to Late Paleozoic complex of crystalline metamorphics, phyllites, quartzites and green and black schists cut by granitic and locally other intrusives. Blue schists reported from south of the Kunlun may mark the site of a Late Paleozoic collision zone. A Cretaceous shelf-carbonate sequence dated by rudists and large foraminifera to range in age from Barremian to Cenomanian covers much of the plateau and conformably overlies red sandstones with local evaporites. These sandstones are strongly unconformable on Paleozoic rocks in the north of the plateau and in the Kunlun. In the southern half of the plateau the Cretaceous rocks are intensely folded and (?) thrust and are cut by granites and extensive volcanic rocks which form the highest parts of the Nyenchen Thangla reaching a maximum height of 7 km ASL. Satellite images indicate the existence of major intrusives with ring structures up to 50 km across and widespread active geysers and boiling springs show that igneous activity persists today. Erosion of the older post-Cenomanian volcanics and intrusive igneous rocks has helped to furnish up to 4 km of detritus in the Kailas conglomerates on the south side of the plateau. Farther north in the Chang Thang and western Kunlun deformation of Cretaceous rocks is less intense and volcanic activity, which is more scattered, is mainly Quaternary in age.

We interpret the Tibetan plateau and the Himalaya as typical products of collision orogeny and suggest that tectonic zones corresponding to: (1) Peninsula India (unmodified continental basement; (2) the Indo-Gangetic Plain (an exogeosyncline); (3) the Himalaya (gliding nappes with cores of basement crystallines); (4) the Indus suture (the site of ocean closure) and (5) the Tibetan plateau (thickened continental crust with abundant evidence of partial crustal melting) can be recognized in older collision orogens. The Hercynotype orogens of Zwart and the basement reactivation orogens of the Precambrian (e.g.,

Pan-African, Grenville and Churchill) we interpret as products of Tibetan-style collision.

The complex processes of collision orogeny result from convergence of two continent-laden plates. Continents which are too buoyant to follow oceanic lithosphere down subduction zones, accommodate continuing convergence by thickening through thrusting at high levels and more continuous deformation at lower levels. We suggest that the Asian continent thickened in preference to the Indian because it was hotter on its southern margin, the site of an Andean arc, at the time of collision. Drainage patterns and the Kailas/Siwalik gravel distribution indicate that elevation of the Tibetan Plateau after the collision preceded that of the Himalaya. Ophiolite derived detritus is known from Middle Siwalik sediments and gives a minimum topmost Miocene age to elevation of the Himalayan ophiolite nappe. Continuing convergence has led to progressive breaking loose of crystalline cored nappes southward and elevation of the Himalaya has accompanied this process through northward back-thrusting localized along the Indus suture. Although the older post-Cenomanian (? Early Neogene) igneous rocks of Tibet are probably subduction related, present igneous activity (sporadic over the whole $10^6 km^2$ of the plateau) we attribute to partial melting of ~ 70 km thick continental crust largely as a result of heat generated within that crust. Young Himalayan granites (~ 10 m.y. old) we suggest are formed in the same way. Similar high potash granites are known to extend a few tens of kilometers across sutures in older collision zones such as those of southwest England and the Manibridge area on the Nelson front in Canada.



URANIUM IN PHOSPHATE DEPOSITS FROM THE POURTALES TERRACE, STRAITS OF FLORIDA

Burnett, William C., Dept. of Earth and Space Sciences, State Univ. New York at Stony Brook, Stony Brook, New York 11790 and Hawaii Institute of Geophysics, Univ. of Hawaii, Honolulu, Hawaii 96822; Gomberg, David N., Rosenstiel School of Marine and Atmospheric Sciences, Univ. of Miami, Miami, Florida 33139.

Phosphate rock samples dredged from the Pourtales Terrace and Pourtales Escarpment have been analyzed for concentrations of both total uranium and uranium (IV). The isotopic composition of uranium in two oxidation states was also determined. Results of the isotopic analyses for U(total) and U(IV) show that all the $^{234}U/^{238}U$ activity ratios are less than or equal to the secular equilibrium value of unity. Therefore these samples must be older than the dating