ABSTRACT

The Mesozoic rocks of eastern Jamaica consist of an inlier of upper Cretaceous volcanic and plutonic igneous rocks, volcanogenic sediments and some thin limestones, all of which formed on the flanks of an island arc. In the southwest portion of this inlier is a narrow belt of regionally metamorphosed rocks. The belt has two subdivisions: the Mt. Hibernia Schists which are metamorphosed to blueschist and lower greenschist facies and the Westphalia Schists which are metamorphosed to amphibolite facies. Field relations and geochemical studies show that many of the rocks are derived from greywackes and volcanogenic sediments. In the eastern section of the Mt. Hibernia Schist outcrop metamorphosed cherts, basalts, gabbros and ultra-mafic rocks are found which suggest an ocean floor origin for some of the blueschist rocks.

Five deformation phases are recognised. D_1 is contemporaneous with metamorphism, produced a fabric parallel to original bedding features, and has a coaxial pure shear character. D_2 is ill defined and caused some folding on NE-SW trending axes. D_3 is much more clearly developed and is reflected by folding on NW-SE trending axes, which was probably coincident with a major phase of E-W strike slip

faulting. D_4 is a minor phase which resulted in the development of low amplitude kink bands at a high angle to the regional structural grain of the schists. D_5 resulted in the formation of fractures and joints which characterise the exposures of the schists. A low grade metamorphic overprint seems to have coincided with D_2 and/or D_3.

A quantitative thermo-tectonic model for the uplift of blueschist terrains is developed, which elucidates the features of such areas. When the model is fitted to the Jamaican data, it suggests that the unloading of the blueschists began in the Cretaceous at about 80-90 m.y.b.p. Uplift was probably contemporaneous with transform faulting in the region, which brought trench generated metamorphic rocks into contact with the volcanic arc generated rocks of the rest of the Blue Mountain Inlier.