STRATIGRAPHY AND STRUCTURE OF THE SOFALA VOLCANICS

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The Sofala Volcanics are a sequence of chert-laminated lutites, arenites and rudites (Fig. 1), containing graptolites of Gisbornian age (Cas, 1969), and including a possible andesite vent 10 km east of Sofala (Cas, 1969). The clastics are immature sediments of andesitic volcanic detritus, and are thought to have been rapidly emplaced on the flanks of one or more marine volcanoes by subaqueous mass-flow processes, mainly of the grainflow type (Stauffer, 1967; Carter, 1975). Packham (1968) suggested a local source for the uppermost rocks and it is possible that the vent may represent that source. The chert bands, which are radiolarian in part, represent periods of non-supply of volcanoclastic sediment.

Interpretations of the Hill End Trough as an inter-arc basin of rifted origin (e.g. Scheibner, 1973) suggest that the Sofala Volcanics block is a rifted segment of the Molong High and that arc dilatation occurred in the Middle Silurian.

Two periods of folding are indicated for the Sofala Volcanics. The first deformation occurred prior to deposition of the Hill End Trough sequence, and produced open to close folds with steeply dipping axial surfaces and sub-horizontal fold-axes trending eastsoutheast. The second-phase folds appear to be comparable in style and orientation with folds in both the rocks of the Hill End Trough (Hordern, 1973), and the Lambie Group (Henry, 1975). The only notable difference is a much wider variety in the plunges of second-phase fold axes in the Sofala Volcanics, which is explicable by the influence of existing folds in these rocks. In addition, pockets of the younger Hill End Trough rocks and the Lambie Group lie within second-phase synclines in the Sofala Volcanics, and themselves form synclines. Folding of the Hill End Trough rocks and second-phase folding of the Sofala Volcanics are considered to be due to the same deformation that caused folding in the Lambie Group, and hence are post-Late Devonian in age.

The andesite vent east of Sofala is thought to be responsible for "buttressing" noted by Hordern (1973) and Packham (1968), but attributed by them to the Sofala Volcanics as a whole.

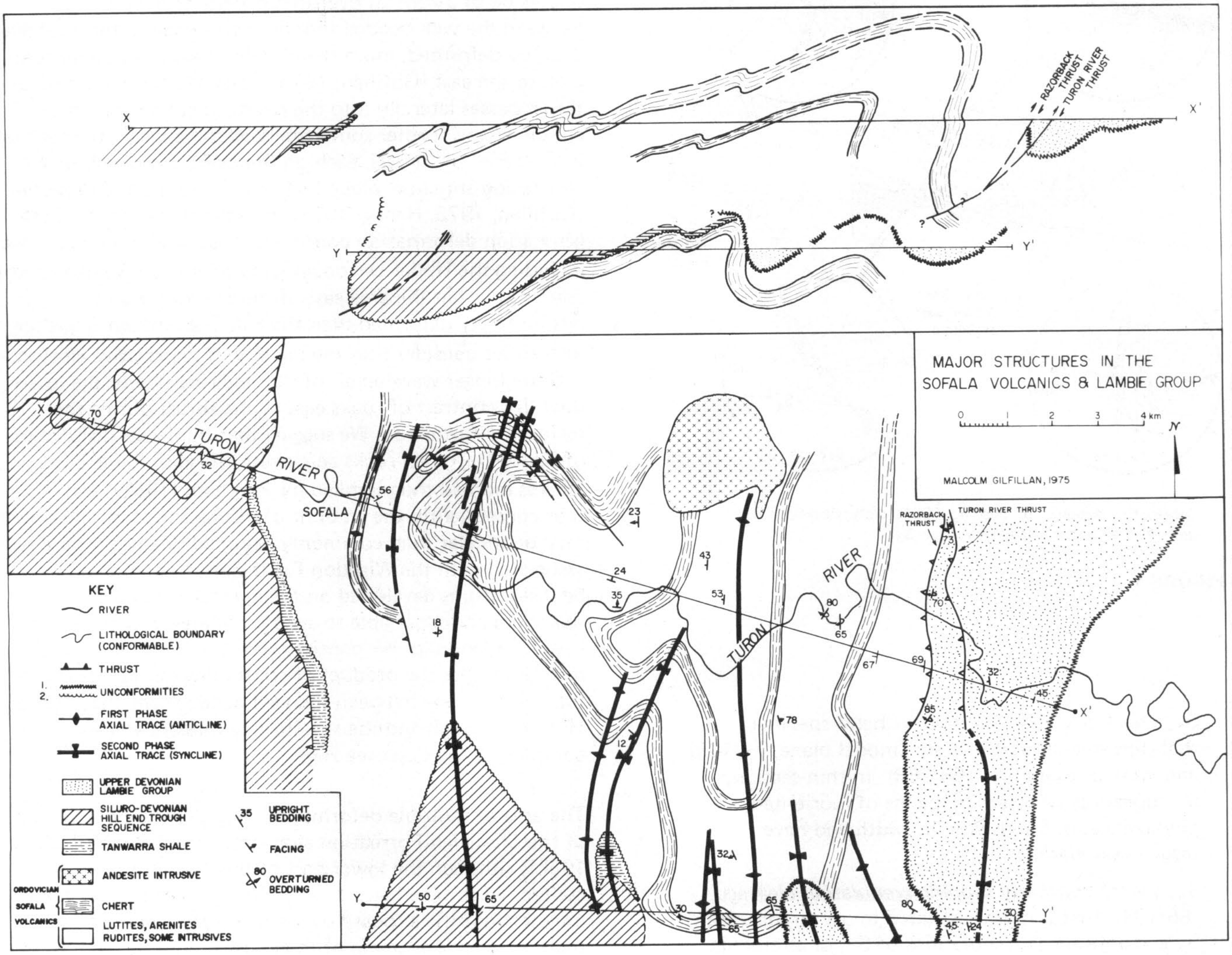

FIGURE 1

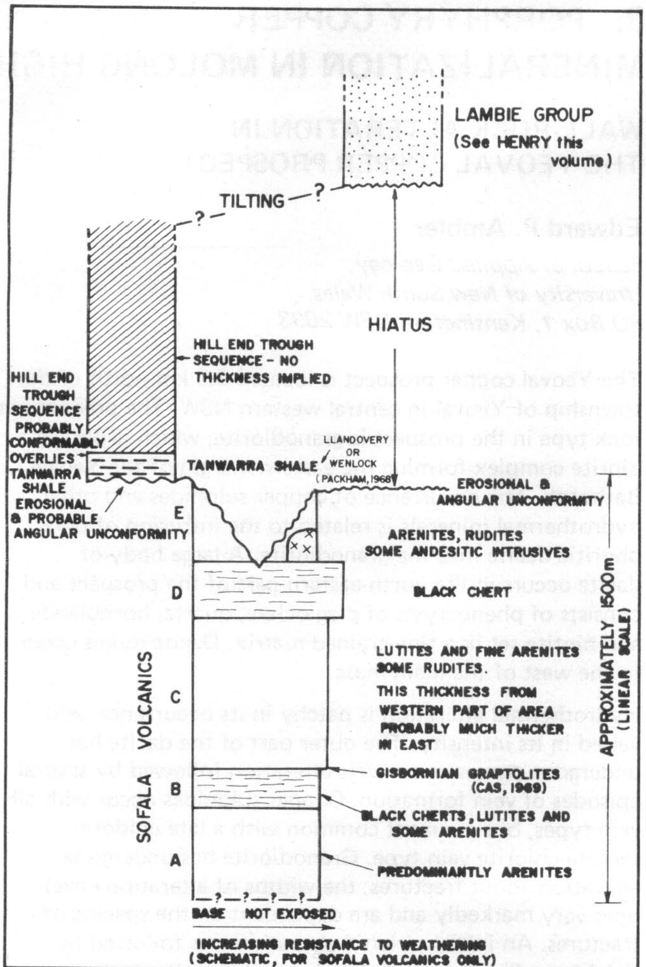

FIGURE 2 STRATIGRAPHIC COLUMN

Definition of the major structures of the Sofala Volcanics (Fig. 1) has shown a repetition of sequence which implies a thickness of about 1500 m for the exposed Sofala Volcanics (Fig. 2). The redefined Sofala Volcanic sequence shows that the Hill End Trough sequence and the rocks of the Lambie Group overlie the Sofala Volcanics at approximately the same stratigraphic level.

THE STRATIGRAPHY AND STRUCTURE OF THE UPPER DEVONIAN ROCKS BETWEEN MT. HORRIBLE AND THE RAZORBACK ROAD, AND THE IMPLICATIONS FOR THE TECTONICS OF NSW

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Recent mapping of Upper Devonian – ?Early Carboniferous rocks north of Mt. Horrible reveals a coarsening-upwards sequence showing a complete regression from neritic to fluviatile and piedmont fan environments. The basal marine and littoral sediments consist of indurated quartz-rich (60-80%) arenites with some *Cyrtospirifer* horizons. The lower fluviatile sequence consists of quartz-rich arenites and red oligomictic conglomerates with rounded quartzite clasts. The upper fluviatile arenites and rudites have variable composition and poor sorting. The uppermost sediments are characterised by an increased proportion of lithic detritus (Fig. 3).

Preliminary palaeocurrent measurements indicate a southerly source for much of the quartz-rich marine and lower fluviatile sediment. This trend overrides a prominent bimodal NW-SE trend (possibly related to alternating longshore currents parallel to the palaeostrandline) in the lower marine sequence. With the exception of the upper texturally immature sediments, the succession is similar to other Lambian Provinces. Palaeogeographic reconstructions of the eastern part of the Lachlan Fold Belt in the Frasnian suggest a NW-SE strandline which receded northeastwards contemporaneously with uplift in the south. The detritus was probably carried by large braided stream systems which deposited the material in a near-shore marine environment where longshore currents, waves and tidal currents could redistribute it.

The upper part of the sequence is less characteristic of Lambian sedimentation, and some palaeocurrent data suggest a northwestern provenance. This change in palaeotopography may be related to uplift associated with the emplacement of the Yeoval Granite (Henry, 1975).

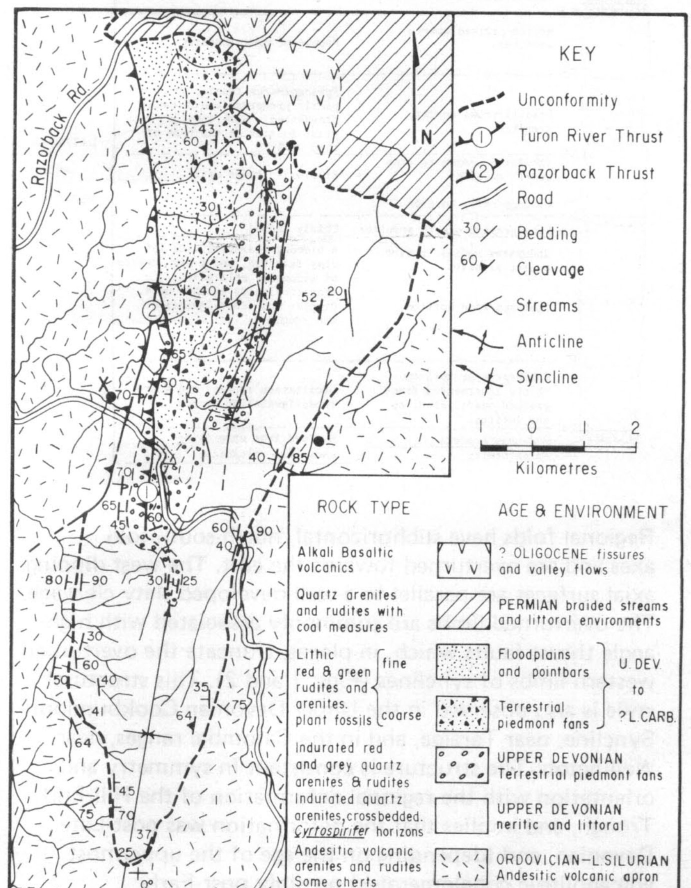

Fig. 1