

EVIDENCES OF ARID CLIMATIC CONDITIONS IN
TASMANIA

The only evidence at present known in Tasmanian rocks, which points to the existence of arid climatic conditions in the past, consists of the existence of saliferous deposits or impregnations of the rocks.

The existing salt pans in the Midlands and the saliferous nature of the Ross sandstones (Triassic) are regarded as evidence upon the above question.

Salt Pans. - (Tas. Geol. Surv. Underground Water Resources No. 1). Several salt pans occur on the plains in the Tunbridge district in the Midland portions of Tasmania. Of these, there are only two large and important ones, viz. the Ballochmyle and the Mona Vale Pans. During the greater part of the year these pans are represented by saline lakes or lagoons, and salts appear only during a few months of dry summers.

The salt which is gathered by local inhabitants consists of well crystallised and pure halite. No other salts appear to crystallise and if present remain in the residual brine which underlies the halite. The Ballochmyle pan covers 15 acres and the Mona Vale pan 10 acres.

The average annual rainfall is 17 to 18 inches, while that of the driest years is only 10 to 11 inches.

The pans occur in regions occupied by rocks of the Ross sandstone series of the Triassic System. These rocks are saliferous (see below) and the salts are regarded as derived from them.

While not denoting the existence of an arid climate, the above pans prove the existence of a sufficient degree of aridity during certain parts of dry years to cause the crystallisation of halite.

Ross Sandstone Series (Triassic). - The Ross Sandstone Series of the Triassic System furnish proof of the existence of arid or sub-arid climatic conditions.

The base of these rocks consists of the Basal Grit series formed by fine conglomerates and coarse grits. The conglomerates overlies the uppermost beds of the Permo-Carboniferous System with a disconformable junction. They pass upwards into the characteristic quartzose sandstones of the Ross series. The sandstones are fine to medium grained types and consist of quartz grains with a small amount of argillaceous material. Flakes of mica (biotite and muscovite) are common, being particularly prominent along bedding planes. The sand grains when liberated from the rock show glistening faces due probably to both crystal and fracture faces. Clay pellets of an ellipsoidal shape and up to 1 inch in longest dimension are fairly common.

Shales and mudstones are interbedded with the sandstones.

The sandstones are sometimes thickly bedded, but often are thinly bedded and show extensive false bedding.

The sandstones are saliferous at certain localities, e.g. Richmond, Colebrook, Bagdad, Buckland and Tunbridge. Salt beds do not actually occur in these rocks, but percolating solutions dissolve the salts and deposit them in caves, pans, etc. The deposited salts are halite and epsomite, the most important localities for the same being the salt pans in the Tunbridge district.

The fossils in the above rocks consist of plants (*Phoenocopsis*, *Alethopteris* and *Thinfieldia* and *Vertebraria*) in the shales and to a less extent in the sandstones; fish in the sandstones (*Acrolepis hamiltoni* and *A. tasmanicus*); and animal (labyrinth odont) in the sandstones.

The whole of the evidence tends to prove that the rocks were formed under terrestrial, fluviatile, lacustrine and estuarine conditions with an arid or sub-arid climate.

References -

Twelvetrees, W.H. Outlines of the Geology of Tasmania, Report of Secretary for Mines, Tas., 1908, p. 142.

Twelvetrees, W.H. The Search for Petroleum in Tasmania, Tas. Min. Dept. Circ. No. 2, 1917.

Nye, P.B. The Underground Water Resources of the Midlands, Tas. Geol. Surv. Underground Water Sup. Paper No. 1, 1921, p. 129.

Reid, A.M. The Buckland Area, The Coal Resources of Tasmania, Tas. Geol. Surv. Min. Resources No. 7, 1922, p.111.

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