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1987/09. Industrial minerals in Tasmania - Ochre

C. A. Bacon

Abstract

Small deposits of ochre are widespread across Tasmania, resulting from the weathering of a variety of sources, such as dolerite, basalt, hematite and serpentine.

INTRODUCTION

Ochre is defined as "an earthy, usually impure, pulverulent, and red, yellow, or brown iron oxide that is extensively used as a pigment" (Glossary of Geology, 1977). Limonite produces yellow and brown ochre while hematite produces red ochre. Clays heavily stained with iron oxides are also called ochres.

Limonite is a general term for a group of amorphous, naturally-occurring hydrous ferric oxides. Limonite is commonly formed by oxidation (weathering) of iron or iron-bearing minerals and may also be formed as an inorganic precipitate in bogs, lakes, springs or marine deposits. Limonite is commonly brown or yellowish brown but may be yellow, red or nearly black (Glossary of Geology, 1977).

Hematite occurs in igneous sedimentary and metamorphic rocks, both as a primary constituent and as an alteration product, and has a brick-red colour when powdered. Hematite is an oxide of iron (Fe₂O₃).

The use of ochre mixed with animal fat as a body decoration was widespread among the Tasmanian aboriginal tribes. Both red and yellow ochre were used, red being the more favoured colour (Robson and Plomley, 1982).

More modern uses for ochre are as pigments in the manufacture of paint and colouring agents in pottery glazes. Hematite is commonly mined and treated to extract metallic iron.

LOCATIONS

Ochre is known to occur in a large number of places throughout Tasmania, although individual deposits are very small. Sites from which the Tasmanian aborigines gathered ochre have been noted by various historians. Deposits on Maria Island and at D'Entrecasteaux Channel were recorded by the Baudin Expedition, while G. A. Robinson recorded ochre at Schooner Cove (Port Davey), Kenmere (near Ouse), near Port Sorell, near Mt Husetop, near the Gog Range, at Point Hibbs, and at the Welcome River (Plomley, 1966 in Robson and Plomley, 1982).

A summary of the localities used this century for various commercial uses is given below:

<i>Location</i>	<i>Derivation</i>
Smithton	Bog iron ore (spring deposits)
Spalford	Weathered basalt
Penguin	Weathered hematite
Mowbray	Weathered dolerite
Beaconsfield	Chrome-bearing iron oxides derived from serpentine

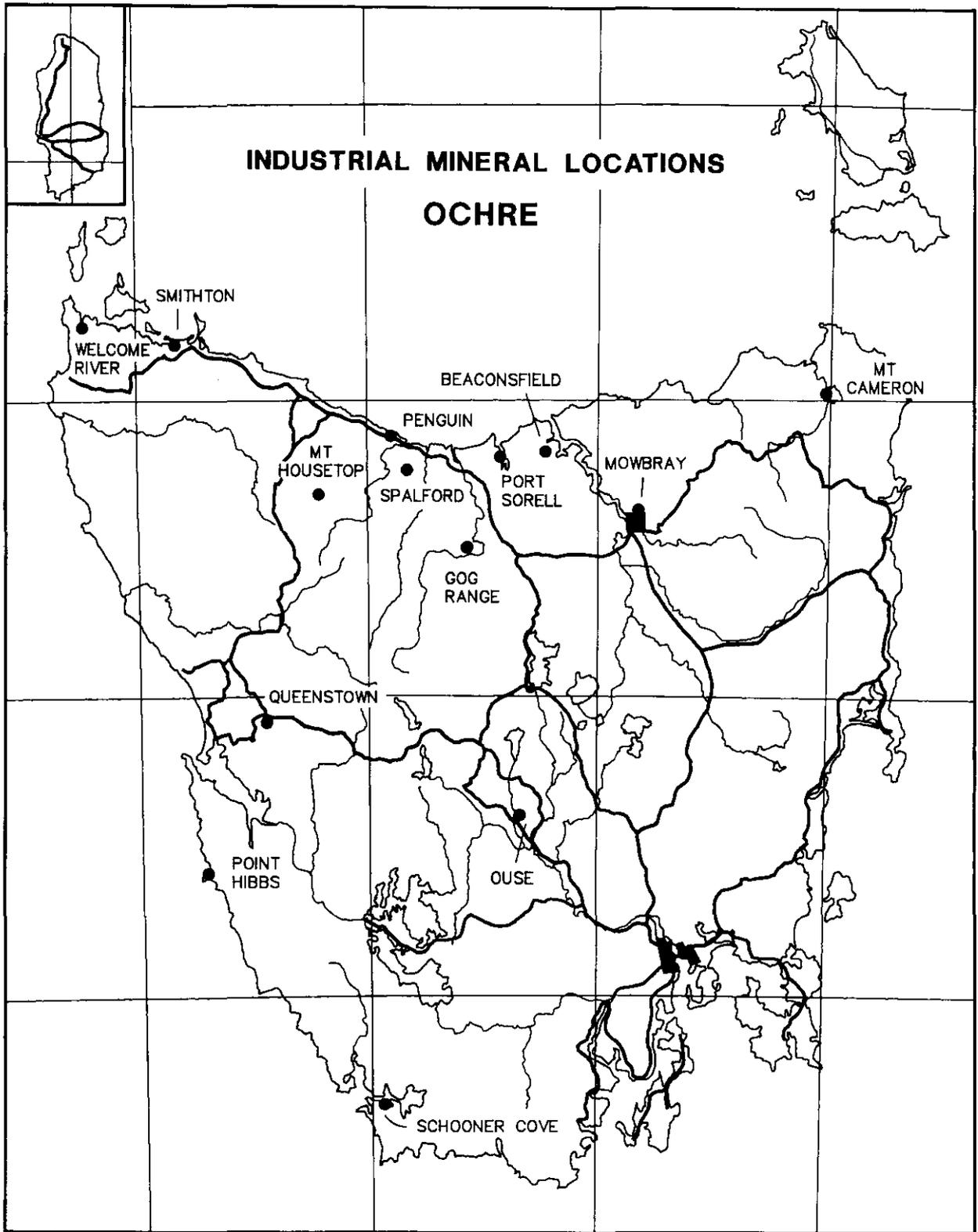


Figure 1.

DESCRIPTION OF THE DEPOSITS

Smithton

A small ochre deposit, known as Sampson's, occurs north-east of Smithton near the mouth of Deep Creek. The ochre has been formed from the precipitation of sediments from mineral springs (bog iron ore), and is of Pleistocene age. The ochre is interbedded with sand and peat. A complete description of the mine (two quarries) and the geology is given in Thomas and Henderson (1943).

Small quantities of this ochre, which was yellow in colour, were mined during the 1940s and sold to a Melbourne market for paint manufacture.

Spalford (Abbotsham)

Ochre is found in small localised patches south of Ulverstone, as a result of weathering of Tertiary basalt. Nye (1925) noted that samples of ochre from this area were tried by the Serpentine Paint Company. A number of ochre deposits in the Spalford area were inspected and described by Blake (1928a, b), and more recently by Burns (1965).

Ochre has been mined intermittently from shallow pits in the area since early this century.

Penguin

South of Penguin, near the Iron Cliffs mine, occurs ochre which is derived from limonite, which in turn is derived from weathered hematite. The main body of hematite is thought by Reid (1923) and Burns (1961) to be an alteration product of Precambrian hematite, having been altered during the Late Cambrian.

Many syndicates have prospected around this ochre looking for an underlying sulphide body. Two drill holes were put down in 1960 to delineate the deposit. A full account of the geology and structure, together with a description of the old workings and history of mining, is given by Burns (1961) and will not be repeated here.

Historic accounts of prospecting and mining activities are given by Montgomery (1896), Smith (1899), Twelvetrees (1903), and Twelvetrees and Reid (1919).

A lease to mine iron ore is currently held by A. Pearson. Production for 1984/85 was 7 645 tonnes.

Mowbray

Near Mowbray, in suburban Launceston, the weathering of dolerite has produced both red and yellow ochres. Around 1897 some initial prospecting was done in the area known as Paint Mine Hill but no industry eventuated. Twelvetrees (1917) inspected this early work and wrote on the deposit. Some ochre from this area was used by the Serpentine Paint factory to make paint in Launceston in the 1920s, along with other pigments and ochres from Beaconsfield.

Beaconsfield

Chrome-bearing oxides of iron occurring near Andersons Creek in the Beaconsfield area have been used most successfully in the manufacture of paint. The oxides come in a large range of colours, and are derived from lateritic weathering of serpentine. The deposits occur as a layered surface mantle covering both Scots Hill [DQ795395] and Mt Vulcan [DQ800390]. Red, yellow, green and brown coloured horizons can be found (Threader and Noldart, 1974). The geology of the ultramafic complex is given by Gee and Pike (1974) and Summons et al. (1981).

The deposits were utilised before 1888 by the Chromate, Asbestos, Paint and Gold Mining Company, then from 1890-92 by the Native Paint and Oxide Proprietary (Twelvetrees and Reid, 1919). Mining leases were held from 1918 to 1928 by the Serpentine Paint Company, who used the Andersons Creek oxides and the deposits at Mowbray as a source of pigment for paint manufacture at their Launceston factory. The workings were examined and described by Threader and Noldart (1974).

Mt Cameron

A Reward Claim for iron was held by A. Gresson on the western end of Mt Cameron from 1920 to 1929. Nye (1925) reports that various ochres (iron oxides) occurred on the lease.

Queenstown

A Reward Claim for ochre was held near the Queenstown abattoirs from 1911 to 1913 by R. Roddick. Nye (1925) described the material as an 'iron-stained product'.

QUALITY

A variety of analyses are listed below for ochres from various deposits:

	1	2
Iron Sesquioxide (%)	45.28	42.46
Alumina (%)	13.72	8.78
Silica (%)	32.40	39.52
Magnesia (%)	1.84	1.50
Lime (%)	0.90	2.28
Water (%)	5.60	5.80

1. Red oxide, Mowbray (Twelvetrees, 1917); analyst W.D. Reid
2. Yellow oxide, Mowbray (Twelvetrees, 1917); analyst W.D. Reid

	3	4
Iron Oxide (%)	55.555	43.678
Silica (%)	37.5	40.613
Alumina (%)	4.166	9.195
Magnesium and calcium salts (%)	1.388	2.683
Combined water (%)	1.389	3.831

3. Red oxide, Mowbray (Twelvetrees, 1917); analyst A. Flounders
4. Yellow oxide, Mowbray (Twelvetrees, 1917); analyst A. Flounders

	(%)
Ferric oxide	75.78
Alumina	4.95
Silica	5.25
Chromic Oxide	3.62
Sulphur	0.09
Phosphorous	Trace
Loss on ignition	9.96

5. Sample from Serpentine Paint Co. trenches, Andersons Creek area, Beaconsfield (Blake, 1928b).

CONCLUSIONS

Small quantities of ochre occur throughout Tasmania as the result of weathering of a variety of raw materials. Some of these deposits have proved commercially useful, although no industry is currently associated with this resource.

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