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Petrographic descriptions of specimens collected in the Mackintosh quadrangle

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The following petrographic descriptions are of a suite of specimens collected by Geologist L. Matthews in the Mackintosh quadrangle.

Southwell Creek

The hand specimen is a fine grained, pale grey rock with galena in fine veinlets.

In thin section the rock is a mass of fine grained crystalline calcite, the particles averaging about 0.01 mm. Angular fragments of quartz, about 0.1 mm across, are very common, and there is a little dark organic material.

The rock is a fine grained siliceous limestone.

Mackintosh River tributary

The hand specimen is a very fine grained, grey and brown banded, sheared rock.

In thin section the rock is a very fine grained felted mass of shreds of sericite and clay minerals with irregular grains of quartz up to 0.02 mm across. There is also organic material in minute shreds and patches.

The rock is a mudstone.

Mackintosh River Area

In hand specimen this is a medium to fine grained strongly sheared rock. It has a pronounced cleavage resembling bedding, but the shearing as shown by texture is at an angle of about 45° to this cleavage. The specimen is heavily iron stained but on a cut face shows irregular grains about 1–2 mm across of pink and white felspar and irregular books and wisps of mica showing a common general alignment.

In thin section, shearing is shown by the alignment of curved irregular books of green biotite and fine grained masses of sericite, replacing pink felspar.

Irregular porphyroclasts of fresh felspar showing undulose multiple twinning and assigned to the oligoclase-andesine range make-up a large part of the rock. Some quartz is present, showing undulose extinction and there is also a little microperthite.

The rock is a sheared dyke with remains of original porphyritic texture and is a true porphyroid.

Mackintosh River Area

The hand specimen is a fine grained, grey bedded rock with irregular lenticles of brown limonite. Limonitic staining gives the rock a brown colour on weathered surfaces. The rock is sheared.

In thin section it consists of grains of quartz, averaging about 0.1 mm across in a matrix of very fine grained sericite. Opaque limonite is plentiful and limonite staining of the sericite is common. Isotropic green and brown substances are common throughout the rock as minute

infilling of the matrix.

The quartz grains show some re-crystallisation and numerous euhedral crystals of quartz are associated with the limonite, and are therefore of secondary origin.

The rock is a sheared mudstone.

Mackintosh River Area

The hand specimen is a medium to fine grained, somewhat friable grey rock, stained a brownish colour in places by iron oxides. It has a few white veinlets.

In thin section the rock consists of angular grains averaging about 0.25 mm across of quartz, quartzite, white mica and calcite, with interstitial very fine grained, mainly micaceous material, stained by a brownish mineraloid. Opaque black carbonaceous material is fairly common in schistose remnants, and there is a little euhedral haematite.

The rock is a fine grained carbonaceous sandstone.

Tributary Creek, Mackintosh River

The hand specimen is a fine grained pale greenish grey rock with some rounded grains, averaging about 2 mm across, of quartz and carbonate. The specimen effervesces with acid.

In thin section the rock consists mainly of very fine grained carbonate, with plentiful angular quartz grains averaging 0.1 mm across. Opaque white euhedral crystals, possibly of leucoxene are thickly disseminated. The larger grains, seen in hand specimen, appear as larger variants of the general texture, which is an unsorted mass of rock and mineral fragments, including crystal about 4 mm which seems to have been originally of olivine, serpentinised and later replaced by quartz carbonate. A little glassy material is present, especially associated with included fragments.

The rock is a carbonated and silicified tuff.

Mackintosh River Area

The hand specimen is a fine grained, dark brownish grey arenaceous rock and is slightly friable.

In thin section the rock consists of angular grains of quartz and quartzite, fragments of white mica and carbonaceous sericite schist in a brownish matrix of quartz, sericite, curved graphitic laminae and a brown isotropic material. Occasionally grains of magnetite are also present. The average grain-size is about 0.25 mm.

The rock is a fine grained carbonaceous sandstone.

Mackintosh River Area

The hand specimen is a grey, siliceous, schistose rock with bands of quartz and chlorite.

In thin section the rock consists of very fine grained quartz in a matrix of sericite. Curved threads of graphitic material are plentiful.

Veins of quartz and chlorite are present. The chlorite has straight extinction and strong pleochroism green – greenish yellow and is therefore pennine.

The rock is a carbonaceous quartz sericite schist.

Mackintosh River Area

The rock in hand specimen is of a purplish colour and consists of a fine grained matrix crowded with phenocrysts of quartz and ferromagnesium minerals from 2 to 3 mm long and of pink and white felspar crystals averaging 5–6 mm across.

In thin section the matrix is a mosaic of quartz and felspar of very even granularity, the grains averaging 0.05 mm across. There is a little scattered chlorite of the same size, and some opaque red haematite.

The phenocrysts comprise quartz in clear rounded grains, often deeply embayed and shattered; pseudomorphs of chlorite after hornblende, occasionally partly or even completely carbonated; plagioclase showing complex twinning and some sericitisation; and orthoclase almost completely altered.

The rock is a quartz-felspar porphyry.

Mackintosh River Area

The hand specimen is a fine grained grey rock with light and dark mottlings. Slight effervescence was obtained with acid.

In thin section the texture is porphyritic with evidence of alteration and replacement. Colourless augite occurs in single phenocrysts and groups of phenocrysts up to 3 mm long. The crystals are somewhat shattered, and replaced in part by chlorite and carbonate. Quartz occurs in recrystallised, sub-angular grains, usually accompanied by irregular patches of chlorite. A little greenish yellow epidote occurs in indefinitely shaped patches.

The ground-mass consists of a mass of lath-like minute crystals of oligoclase, showing lamellar twinning, but largely altered to carbonate, together with small grains and patches of quartz, felspar carbonate, chlorite and epidote and scattered white opaque material. The rock is an altered porphyry, possibly a lava, hybridised and carbonated.

West Tributary of Southwest Creek, Mackintosh River

The hand specimen is a medium grained, pale grey, fragmental rock, with orientation of platy fragments. The fragments themselves are of very fine grained black, white and grey material, set in a fine granular matrix which has become friable in weathered parts of the rock.

In thin section the orientation of platy fragments seen in the hand specimen appears as a flat-lenticular texture consisting of angular fragments of quartz, quartzite, chert, mudstone, graphite sericite schist, carbonate kaolinsed felspar. These fragments average 2 mm in length and are of fairly even size. They are set in a matrix of fragments of similar composition and about 0.2 mm in length. Carbonate is more frequent in the matrix; but some of the larger chert fragments contain little rhombs of carbonate. Minute veinlets of quartz are common cutting across the rock fragments. The rock is a greywacke.

Mackintosh River Area

In hand specimen this is a pale coloured, fine grained, friable, weathered rock. Shearing is well in evidence and minute flakes of sericite glitter with reflected light.

In thin section the rock consists of grains of quartz up to 0.05 mm long, and flakes of white mica in a very fine grained sericite matrix stained by iron oxide. The iron oxide staining emphasizes

the shearing.

The rock is a sheared mudstone.

Creek bed north of Mackintosh River

The hand specimen in a fine grained buff coloured rock, very siliceous and showing minute flakes of mica or irregular fractures.

In thin section the rock consists of a mosaic of angular grains of quartz about 0.05 mm. across, and of very uniform grain size. A little white mica occurs between the grains as small crystals.

The rock is a siltstone.

North of Mackintosh River

In hand specimen the rock is medium grained and greenish in colour. Blades of felspar up to 2 mm long, greenish ferromagnesians and black grains of iron ore minerals are visible.

In thin section the texture is a sub-ophitic, with felspar laths penetrating the pale coloured augite. The rest of the section is a mass of plagioclase laths averaging about 0.5 mm in length, with occasional opaque grains of ilmeno-magnetite. Some chlorite is also present and a little finely granular epidote. Intergrowths of quartz and felspar occur interstitially.

The rock is a typical Jurassic dolerite.

Mackintosh River Area

The hand specimen is a dark brown, fine grained sheared rock.

In thin section the rock consists of grains of quartz about 0.02 mm across, with sericite and dark organic material. Some organic material however appears as a thin yellowish film obscuring other minerals.

The rock is a shale.

South Tributary of Mackintosh River

The hand specimen is a very fine grained, pale coloured finely banded rock. It is very little indurated and appears to be of comparatively recent origin. Fine white scales of mica can be seen in the bedding planes.

In thin section the rock shows grading accompanied by variations in colour, the finer material being obscured by a deep brown colouration which almost disappears in the coarse grained parts. The minerals present are quartz, in angular grains, sericite and clay minerals, and minute grains of zircon ilmenite-rutile etc., and organic material. Zircon in minute rounded grains is, in places, quite plentiful. The coarser grained bands consist mainly of quartz grains averaging about 1.5 mm and grade into much finer material of deep brown colour. The bands vary in thickness from 2 mm. to 0.25 mm.

The rock is a varved mudstone.

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