

PETROLOGY

TR 17-55-60

12. Descriptions of rocks and core specimens from the Longford Quadrangle.

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Specimen 72-304, Campbell Town [EP459575]

Olivine-andesine basalt

The hand specimen is a fine-grained greenish grey rock, with vesicles up to 3 or 4 mm across fairly common. Black magnetite crystals in strings and patches give the rock a rather blotchy appearance. Phenocrysts of olivine up to one millimetre long are common and show alteration to a yellowish powder. On wetting the rock there is a strong odour of Fullers earth.

In thin section, as well as being porphyritic, the rock shows intergranular and intersertal textures consisting of pale brownish or greenish granular augite and a little glass of similar colour in a network of andesine laths about 0.1 mm long. Magnetite is prominent as black areas and strings of minute crystals. Phenocrysts of olivine are largely altered to fine opaque material, with granular unaltered mineral towards the middle.

Specimen 72-305, west of Campbell Town [EP375600]

Ferruginous quartz wacke

The hand specimen is a grey, fine-grained, dense-structured siliceous rock, with many visible grains of glassy quartz well below one millimetre across down to the limits of visibility and occasional grains of quartz and quartzite above one millimetre across. Brown stains of hydrated iron oxides mark the rock which has a sub-conchoidal fracture.

In thin section the rock consists of angular to sub-rounded grains of quartz in a matrix of finer grained quartz and grains of magnetite largely

altered to limonite. However there is no real distinction between the individual quartz grains and the quartz of the matrix, the one grading into the other.

Specimen 72-306, east of Campbell Town [EP463619]

Basalt

The hand specimen is an aphanitic chocolate coloured rock with phenocrysts of dark glassy, and opaque yellowish silicate mineral up to about one millimetre in length. Vesicles occur up to 3 or 4 mm across and are lined with greenish yellow zeolites. The larger vesicles are slightly flattened.

In thin section the texture is intergranular consisting of grains of pyroxenes and magnetite filling the interstices between twinned laths of acid labradorite. The smaller pyroxenes are largely euhedral and have a reddish brown staining. The phenocrysts are mostly fresh enstatite, but others are altered in part to serpentine and stained red along cracks by iron oxides.

Specimen 71-598, BH7, 163.3-163.5 m, Carrick [DP982982]

Tertiary sandstone

The hand specimen is a fine-grained, friable, poorly consolidated, pale greyish or brownish rock consisting largely of angular grains of quartz and minute books of mica, together with black carbonaceous material and some faint brownish staining due to iron oxides.

In thin section the quartz appears as angular grains averaging 0.05 mm across. Biotite and muscovite occur as minute ragged plates of similar or smaller size filling interstices between grains. The rock is very porous, but some finer material has probably been lost in the preparation of the section.

There is a fine irregular banding in the rock which may be due in part to bedding and slumping, and in part to solution banding.

Specimen 71-599, BH28, 29 m, 'Rhodes' [EP137915]

Dolerite

The hand specimen is a medium-grained variegated white and green rock consisting of feldspar and a ferromagnesian mineral. The specimen shows an igneous contact on one face which contains quartzite pebbles and black carbonaceous material.

In thin section the texture is semi-ophitic with some clear crystals of labradorite about 0.25 mm long, partly enclosed in crystals of pyroxene up to 2 mm long and semi-opaque with alteration to biotite, chlorite, serpentinous material and carbonate. The pyroxenes have selvages of magnetite and acicular apatite is commonly associated with the feldspar. A very fine-grained mesostasis is cloudy with alteration.

Specimen 71-600, BH28, 29 m, 'Rhodes' [EP137915]

Conglomerate

The hand specimen is a predominantly yellowish green rock composed of rounded pebbles about 10 mm in length in a friable sandy matrix with fine sub-parallel veins of carbonate cutting the whole rock, even passing into the pebbles.

In thin section the pebbles consist of greywacke type sediment

containing quartz, feldspar and lithic fragments in excess of fine-grained brownish matrix. A small minority of pebbles consist of quartzite.

The material in between the pebbles consists of angular quartz grains and a few cloudy grains of feldspar in a matrix of brownish carbonate. However, in addition each pebble has a rim of fibrous carbonate and carbonate veinlets cut some pebbles. Needles of apatite occur in parts of the matrix.

Specimen 71-601, BH34, 32 m, 'Forest Lodge' [EP139951]

Breccia

The hand specimen is a dark brown rock with quartz or quartzite fragments of all sizes but chiefly the finest, from 10 mm long down to microscopic size. The specimen contains many holes of irregular roundish shape, long in comparison with their diameter, which ranges from 2 or 3 mm down to hairline dimensions, some lined with a little carbonaceous material, which may be the impressions of plant remains.

In thin section the rock consists of grains of silica of seriate sizes bonded by reddish-brown hydrated oxides of iron. Some of the larger grains are rounded or may show some rounding, but rounding is occasionally seen in grains as small as 0.25 mm across so that both wind deposited and water deposited material is present. The grains consist mainly of quartz showing signs of recrystallisation but some quartzite and schistose quartzite is also present.

Specimen 71-602A, BH34, 76 m, 'Forest Lodge' [EP139951]

Greywacke

The hand specimen is a medium- to fine-grained, greyish rock.

In thin section the rock consists of angular grains of lithic material, quartz and feldspar in a siliceous and carbonate matrix.

Specimen 71-602B, BH34, 76 m, 'Forest Lodge' [EP139951]

Greywacke

Similar to Specimen 71-602A, but with the addition of pebbles, mainly of fine-grained greywacke type rock, averaging about 10 mm in length. This rock is somewhat like Specimen 71-600.

Specimen 71-603, BH35, 17.5 m, 'Forest Lodge' [EP128944]

Sandstone-Quartzite

The hand specimen is a fine-grained brown rock similar to Specimen 71-601 and with similar holes due to plant remains.

In thin section the rock is paler than Specimen 71-601 and of more even grain size, the larger fragments not being present. It consists of angular to sub-rounded fragments of quartz set in a mainly siliceous matrix.

Plant remains have been silicified but a little carbonaceous material remains to outline the original cellular structure.

Some recrystallisation of quartz has occurred and in the hand specimen the gradation from sandstone to quartzite can be seen. The fine siliceous matrix sinters, and dark organic material is partly burnt out. Recrystallisation of the larger particles follows.

Specimen 71-604, BH60, 62.4-62.7 m, 'Delmont' [EP193944]

Limestone

The hand specimen is a soft, brown porous fine-grained rock effervescing with acid in the cold, the acid colouring rapidly. The rock contains a few rounded pebbles of quartzite from 3-300 mm in diameter.

In thin section the rock is a granular aggregate of crystalline calcite stained brown with iron oxides. There are occasional grains of quartz and feldspar and some interstitial clayey material. The grain size is about 0.05 mm.

Specimen 71-605, BH62, 82.2-83.8 m, 'Barton' [EP260858]

Limestone

The hand specimen is a dark brown, soft but very fine-grained and compact rock effervescing with acid in the cold. It contains pebbles of dolerite with rounded edges up to 30-40 mm in diameter and a variety of smaller fragments including quartz.

In thin section the rock is a dense fine-grained mass of yellow-brown calcite with aggregate polarisation except where recrystallisation has begun. Angular grains of quartz and feldspar averaging 0.1 mm across are common. Around the larger dolerite pebbles the grain is coarser and a thin band of white recrystallised calcite surrounds the pebble.

Specimen 71-606, BH63, 32-42.6 m, 'Rokeyby' [EP305852]

Conglomerate

The rock contains rounded pebbles of quartzite, basalt and dolerite. The matrix contains lithic fragments up to about 2 mm in length with a carbonate cement which effervesces on warming.

Specimen 71-607A, BH65, 44-45.7 m, Evandale [EP234935]

Dolerite-quartzite contact

This specimen is on the contact between dolerite and quartzite. A brownish mineral like iddingsite is prominent in the dolerite at the actual contact together with traces of a bright green mineral like garnierite.

Specimen 71-607B, BH65, 44-45.7 m, Evandale [EP234935]

Olivine basalt

The hand specimen is a black porphyritic rock with phenocrysts ranging up to one millimetre in length in an aphanitic groundmass.

In thin section the groundmass shows hyalopilitic texture and consists of minute laths of labradorite, octahedra of magnetite and microcrysts of pyroxene together with a brownish glass.

The phenocrysts consist of octahedra of magnetite about 0.25 mm across and crystals of olivine and pyroxene up to about one millimetre in length. The olivine is colourless, cracked and usually altered in part to iddingsite. The pyroxene is a pale brown augite and there are also patches of brownish glass.

Specimen 71-608, BH66, 116.4-117.3 Powrana [EP208842]

Conglomerate

The hand specimen is a greenish yellow rock, consisting of rounded pebbles of quartz, quartzite, slate and schist in an indurated fine-grained clayey matrix. A pebble of dolerite about 50 mm in length is in the centre of the specimen.

The thin section shows the central dolerite pebble to consist largely of relatively fresh laths of labradorite averaging 0.2 mm in length, but the augite is brownish and semi-opaque and there is much carbonate present. The rest of the specimen is a mass of quartz grains and lithic fragments in a groundmass of secondary quartz and clay material.

Specimen 71-609, BH70, 14 m, Evandale [EP208970]

Olivine basalt

The hand specimen is a fine-grained black rock with pearly cleavage faces of feldspar crystals up to one millimetre in length.

In thin section the texture is intergranular composed of narrow laths of labradorite averaging about 0.75 mm in length which form a network enclosing granules of pyroxene, olivine and magnetite. Scattered through the rock are largely subhedral and anhedral crystals of olivine partly altered to serpentine.

Specimen 71-610, BH71, 51.8 m, Evandale [EP250986]

Basalt conglomerate

The hand specimen is a dark greenish weathered rock with black fine-grained pebbles about 20 mm long and fine white veinlets traversing the matrix.

In thin section the matrix consists of dark brown opaque clay material stained brown with iron oxides and containing angular to semi-rounded fragments of quartz and feldspar. The fine veinlets consist of fibrous carbonate and carbonate fills interstices between other materials. The larger pebbles consist of weathered dolerite and some of the smaller rounded fragments are schistose.

Specimen 71-611, BH69, 51.5-52.4 m, Perth [EP197927]

Dolerite in conglomerate

The hand specimen consists mainly of a bluish-grey medium- to fine-grained rock containing feldspar and ferromagnesian material. However one corner and side of the specimen displays rounded pebbles in a matrix of finer grained clastic material.

In thin section the massive part of the specimen consists of dolerite with glomeroporphyritic tendencies. Crystals of pyroxene averaging one millimetre in length tend to occur in clusters with the intervening spaces made up of stubby laths of labradorite and mesostasis.

The clastic part is a conglomerate made up of pebbles of dolerite, quartzite, schist and mudstone in a matrix of quartz grains, carbonate and weathered doleritic material.

The dolerite which makes up the greater part of the specimen is probably the edge of a boulder.

Specimen 71-612, BH69, 169-169.7 m, J.M. Yould's property [EP197927]

Conglomerate

The hand specimen is a greenish black clastic rock with rounded lithic pebbles and veinlets of calcite.

In thin section there are rounded pebbles of coarse- to medium-grained dolerite, very fine-grained dolerite (probably from a chilled margin), with altered feldspar in a matrix containing quartz feldspar and pyroxene.

Specimen 71-613, BH74, 36.5-37.7 m, 'Pleasant Banks' [EP184953]

Analcite-olivine basalt

The hand specimen is a fine-grained, charcoal grey crystalline rock with crystals at the verge of visibility and occasional small vesicles filled in with white material.

In thin section the texture is intersertal and porphyritic. Phenocrysts up to one millimetre in length and irregular patches of iddingsitised olivine are common and euhedral crystals of brownish augite up to 0.5 mm in diameter occur. The main bulk of the rock consists of a network of twinned labradorite crystals averaging 0.25 mm in length enclosing minute grains of augite and magnetite in a brown glass. Analcite is common as irregular patches up to one millimetre in length and as occasional veinlets.

Specimen 71-614, BH79, 73.1-73.4, 'Fordon' [EP184953]

Granite porphyry

The hand specimen is a porphyritic dark rock with phenocrysts of quartz and feldspar up to one millimetre in length in a medium-grained matrix containing feldspar and quartz, the feldspar being white and cleaved and the quartz dark and glassy. Black flakes of biotite are also common measuring up to one millimetre in diameter.

In thin section a hypidiomorphic texture appears in the material filling the interstices between the phenocrysts which contains crystals of clear quartz, cloudy feldspar and dark brown and green strongly pleochroic biotite. A little white mica is also present.

Specimen 71-615, BH77, 45.7-47.8 m, Relbia [EQ184051]

Conglomerate

The rock contains pebbles of dolerite up to 50 mm or more in diameter in a matrix formed from the debris of weathered dolerite and consisting of angular grains of feldspar and pyroxene in opaque clay material stained by serpentinous residues.

Specimen 71-616, BH77, 82.2-83.8 m, Relbia [EQ184051]

Conglomerate

This rock is a pale coloured conglomerate with pebbles up to 20-30 mm long, the rock being somewhat weathered.

The rock contains pebbles of dolerite, quartzite and mudstone in a matrix of quartz and clay, together with fresh feldspar and lithic fragments. Fine cracks that have developed around the peripheries of dolerite pebbles, in the matrix, and across mudstone pebbles have been filled in with crystalline silica.