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THE GEOLOGY OF THE GOGANGO RANGE, QUEENSLAND

by

F. Olgers, A.W. Webb, J.A.J. Smit (Bureau of Mineral Resources), and B.A. Coxhead (Geological Survey of Queensland).

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SUMMARY

Outcrop in the Gogango Range is generally poor; the best exposures are in the road cuttings along the main Rockhampton - Duaringa road. The sediments are tightly folded and many of the folds are overturned to the west. Numerous faults are indicated on the airphotos.

The oldest rocks in the area are the Silurian-Devonian rocks at Thuriba Homestead. They are overlain by the Lower Permian Camboon Andesite, which has a wide distribution throughout the Gogango Range. The unit crops out in the cores of a number of north-north-west trending anticlines. The Camboon Andesite is overlain by and interfingers with the fine-grained sediments of the Rannes Beds. The Rannes Beds is the most intensely deformed unit in the area. The rocks are tightly and in places isoclinally folded and show either slatey or fracture cleavage. On the eastern flank of the Gogango Range, the Camboon Andesite and the Rannes Beds are unconformably overlain by the pillow lavas of the Lower Permian Rookwood Volcanics. Along the western and north-eastern flanks of the Gogango Range, the Camboon Andesite, Rannes Beds and Rookwood Volcanics are overlain by the Upper Permian marine Back Creek Group. One marine fauna and poorly preserved plant material have been found in the unit.

INTRODUCTION

The Gogango Range is in east central Queensland, 45 miles south-west of Rockhampton and covers parts of the Duaringa, Rockhampton, Monto and Baralaba 1:250,000 Sheet areas. It is bounded by the Fitzroy River to the north, the Dawson River to the west, the Don River to the south and the Callide Valley to the east. The area is dominated by the rugged Gogango Range which rises up to 1250 feet above the surrounding country.

Access by rail and road into the general area is good but vehicular access within the area mapped is generally poor. The main Duaringa - Rockhampton road, which was completely bituminized during 1963, crosses the Gogango Range in the north. The Baralaba - Rockhampton road via Wowan crosses the range in the south, south of the Don River. This road has a gravel surface. All other roads and tracks in the area are unsurfaced and only very few of these cross the ranges or penetrate them to any distance. The most useful track in the area runs west from the Wowan - Rannes road, just south of Cooneel Siding, across the Gogango Range to Thuriba Homestead. It continues westerly from the homestead across the Don River to join the Baralaba - Duaringa road, 10 miles north-north-east of Baralaba. The Don River crossing is steep and can only be negotiated during the dry season.

The region has a sub-humid climate with an annual rainfall of 20-30 inches, which is mainly received during the summer months.

Cattle raising is the main industry of the area, which contains a relatively small number of grazing properties.

The Gogango Range occupies most of the area mapped. It is flanked on both sides by undulating and in places fairly rugged hilly terrain. Mount Spencer, 7 miles west of Wowan, is the highest peak in the area, and rises to 1550 feet above sealevel. The ranges are deeply incised by a large number of creeks, generally with a dendritic pattern, which drain into the Don, Dawson and Fitzroy Rivers.

Aerial photos of Duaringa, Baralaba and Monto at a scale of 1:85,000, and flown in 1960 and 1961, were used. The geology was plotted on photo-overlays and transferred to an uncontrolled field compilation sheet to produce the map accompanying this report.

GEOLOGY

Introduction

The Gogango Range, from Rannes in the south to the Fitzroy River in the north was mapped during August and September 1963. It was the first attempt to map the whole range since Dunstan (1901) published a map covering the area.

The Gogango Range has always been a controversial area in Queensland geology. The rocks, mainly andesitic volcanics and slaty argillaceous sediments, were regarded as Permo-Carboniferous by Dunstan (1901), and Lower Palaeozoic by Reid & Morton (1928). Hill (1951) stated that the rocks in the Gogango Range could possibly be metamorphosed Permian rocks, but were more likely to be Lower Palaeozoic or older, and forming a structural high, the Gogango High, between the Yarrol Basin to the east and the Bowen Basin to the west. Tweedale (pers.comm.) believes the rocks in the Gogango Range to be of Permian age. Malone, Mollan, Olgers and Kirkegaard (1963) mapped parts of the range as Silurian-Devonian, Undifferentiated Palaeozoic, Permian and Mesozoic. The 1963 mapping did not establish, beyond doubt, the age of the rocks in the Gogango Range; however the present knowledge indicates that the whole range, except a small area near Thuriba Homestead appears to consist largely or entirely of Permian rocks.

Discussion of Problems

The mapping of the Gogango Range area was handicapped by poor access, rugged terrain and generally poor outcrop. However, the main difficulty is the absence of fossils except for a small fauna near Thuriba Homestead (DU 146), some Permian fossils farther to the west (DU510) and some indeterminate crinoidal limestones scattered throughout the range.

Most of the available time was spent mapping the boundaries between the volcanics and sediments. This was relatively easy in the west but very difficult in the east where, in places, the volcanics and sediments are interbedded. In addition, the rocks are frequently highly sheared, folded, faulted and intruded by diorite.

The only determinable fossil collection obtained from the whole area, excluding the Permian fossils in the west, was found just north of Thuriba Homestead (Appendix 2). The assemblage is poor, consisting mainly of fragments of corals, which indicate a probable Silurian to Devonian age. The fossils occur in a recrystallized limestone which is interbedded with sheared argillaceous sediments and sheared andesitic volcanics. These Silurian-Devonian rocks occupy the core of the Thuriba Anticline and are overlain by a sequence of volcanics including andesite, spilite, basalt and crystal tuff. The relationship between the Silurian-Devonian rocks and the overlying volcanics is not known. The outcrop in the area is very poor and the contact has not been observed. The relationship may be a faulted one. Numerous faults are clearly indicated on the airphotos.

Two possible relationships must be considered:

(i) The Silurian-Devonian limestone and associated sheared sediments and volcanics at Thuriba Homestead, and the overlying andesitic volcanics are all of Silurian-Devonian age; or

(ii) An unconformity exists between the Silurian-Devonian rocks and the overlying andesitic volcanics. In this case, the volcanics are either of Devonian-Carboniferous age and comparable with the Devonian-Carboniferous volcanics mapped in the core of the Craigilee Anticline in the Duaringa Sheet area (Malone et al., 1963), or they are of Lower Permian age, belong to the Camboon Andesite which crops out extensively farther to the south, and can be correlated with the Lower Permian Lower Bowen Volcanics in the northern Bowen Basin.

In the west limb and on the north and south plunges of the Thuriba Anticline, the andesitic volcanics are overlain by poorly exposed fossiliferous limestone and calcareous siltstone. The age of these rocks is probably Upper Permian (Appendix 1) and they have been identified with the Oxtrack Formation of the Monto and Mundubbera Sheet areas (Derrington, Glover and Morgan, 1959). The Oxtrack Formation is present only in a narrow belt along the western margin of the Gogango Range.

Andesitic volcanics similar to those in the Thuriba Anticline occur throughout the Gogango Range, but mainly in the east and south. The volcanics occupy the cores of a series of well-defined anticlines which lie in a north-north-west trending belt just east of the Thuriba Anticline, and they form a large north-north-west trending mass along the eastern edge of the range. The volcanics in the southern part of the Gogango Range extend southward into the Monto Sheet area where they have been mapped as Lower Permian Camboon Andesite (Dear, pers. comm.). In the Monto Sheet area, the Camboon Andesite is overlain by the Oxtrack Formation.

The Gogango Range is on a major anticlinal trend within the eastern boundary of the Bowen Basin. In the northern Bowen Basin, the Lower Bowen Volcanics crop out on this trend in a south-south-east plunging anticline, extending into the northern part of the Duaringa Sheet area (Malone et al., 1963). South of the main anticlinal nose on the same trend, the Lower Bowen Volcanics crop out in the cores of several anticlines the nearest being about 40 miles north-north-west of Thuriba Homestead. South of the Gogango Range, in the Monto and Mundubbera Sheet areas, on the same major anticlinal trend, the Camboon Andesite crops out in a north-north-west plunging anticline, extending northwards almost to the Gogango Range. The volcanics of the southern Gogango Range crop out in the cores of several anticlines on the same anticlinal trend as do the Lower Bowen Volcanics farther north and the Camboon Andesite farther to the south. The Lower Bowen Volcanics and Camboon Andesite are equivalent Lower Permian units and both are overlain by the Back Creek Group. (This discussion of the stratigraphic position of the Camboon Andesite exposed in the Gogango Range is largely based on the regional mapping of the whole Bowen Basin. A full report on this regional mapping will be published on the completion of this work).

The above regional and local considerations support the theory that the volcanics in the Thuriba Anticline and elsewhere in the Gogango Range are of Lower Permian rather than Lower Palaeozoic age. In this report and on the accompanying geological map, the volcanics are therefore tentatively referred to as Camboon Andesite.

On the east limb of the Thuriba Anticline and to the east and north-east in the Gogango Range, the volcanics are overlain by, and interbedded with a sequence of argillaceous sediments which are intensely sheared in places. These

sediments are mapped as Rannes Beds, that being the original name used by Dunstan (1901) and Reid and Morton (1928) to describe these rocks in the Rannes area.

The Oxtrack Formation on the west limb of the Thuriba Anticline, and the Rannes Beds along the western and north-eastern margins of the Gogango Range, are overlain by a sequence of lithic sandstone, shale and conglomerate in places tightly folded. The contact between these rocks and the Rannes Beds has not been observed. This sequence, containing some scattered, poorly preserved plant fragments and, north-west of Thuriba Homestead (at DU 510), a marine fauna, has been mapped as undifferentiated Back Creek Group.

The undifferentiated Back Creek Group of the Gogango Range is probably equivalent to the upper part (Unit C, Dickins, Malone & Jensen, 1962) of the Back Creek Group (Middle Bowen Beds) as mapped farther to the north in the Duaringa and St. Lawrence Sheet areas (Malone et al., 1963). The lower part of the Back Creek Group (Units A & B, Dickins, et al. 1962) was either eroded away or is represented in the Gogango Range by the Rannes Beds. To the south, in the Monto and Mundubbera Sheet areas, there is evidence that most or all of the lower part of the Back Creek Group was eroded away before deposition of the upper part of the Group (Oxtrack, Barfield & Flat Top Formations), and similar events possibly occurred in the Gogango Range area. The Rannes Beds could be partly equivalent to units A & B of the Back Creek Group and a disconformity probably exists between the Rannes Beds and the undifferentiated Back Creek Group.

Silurian - Devonian rocks at Thuriba Homestead.

Fossiliferous limestone, with closely associated volcanics and argillaceous sediments, crops out about ¼ mile north of Thuriba Homestead. Outcrop in the area is poor and is found mainly in a shallow creek bed. The limestone bed is only one foot thick and is largely recrystallized to marble, It contains poorly preserved corals and fragments of corals and polyzoa, which Professor D. Hill suggests are of probable Silurian to Devonian age (Appendix 2). The associated volcanics are mainly purple amygdaloidal flow rocks. The sediments are greenish-grey siltstone and shale. All rocks have been intensely sheared and the airphotos clearly show that extensive faulting has taken place in the area.

Camboon Andesite

The name Camboon Andesite was first published by Derrington, Glover and Morgan (1959). The unit was named after Camboon Homestead in the Mundubbera Sheet area. The type area of the formation is near Camboon Homestead.

The Camboon Andesite makes up a large part of the Gogango Range as large isolated north-north-west trending expos -ures in the western and along most of the eastern flanks.

The topography formed on the formation ranges from gently undulating hilly terrain to rugged ranges. Some steep fault controlled scarps occur 6 miles east of Thuriba Homestead. The vegetation is generally sparse, giving rise to a reasonably distinct, light tone airphoto pattern; however, in many places, the clearing of timber has made the interpretation of boundaries difficult.

The Camboon Andesite in this area consists of a large variety of rock types of which andesite is the most common. Basalt, spilite (the Authors do not agree with the nomenclature of some of these rocks as described in Appendix 6 as no albite is present), agglomerate and tuff, with minor rhyolite, trachyte, schist, slate and argillite are also present (for full descriptions of all rock types, see Appendix 6, pp. 1-35).

The andesite is generally, except in some porphyritic flows, massive, fine-grained, greenish-grey to dark grey. One of the best areas of outcrop of the Camboon Andesite occurs about 6 miles east of Thuriba Homestead (Pt.859). There, the unit includes Pahoehoe lava with ropy structure on the surface and lava rolls, closely associated with agglomerate, andesitic volcanic breccia, sheared andesite containing blocks of vesicular lava, and tuff containing 'bombs' up to 9 inches in diameter. Three miles south-south-east of this locality, the flow rocks are interbedded with well-bedded, coarse-grained tuff and argillite. In outcrop, most of the rocks appear to have been considerably sheared; however in thin section, most show only minor shearing. The intensely sheared appearance of many outcrops is apparently a weathering effect.

The Camboon Andesite crops out in a series of anticlinal cores, and is in most places overlain by the Rannes Beds. In the western part of the ranges, the contact between the units is commonly gradational from flow rocks, crystal tuff and tuffaceous sediments of the Camboon Andesite, to shale and siltstone of the Rannes Beds, but can easily be mapped. In the east of the Gogango Range, the contact is generally difficult to determine because of complex faulting and interfingering. This is well illustrated in the Rannes-Wowan area; north of Rannes, the proportion of volcanic rocks in the Rannes Beds increases gradually until west of Buneru Siding,

they could not be distinguished from the Camboon Andesite. In the west limb of the Thuriba Anticline, the Camboon Andesite is overlain by the Oxtrack Formation and the undifferentiated Back Creek Group; south-east of Grantleigh Siding, they are also overlain by sediments of the Back Creek Group.

The occurrence of Pahoehoe lava with lava rolls, volcanic breccia, agglomerate, and tuff containing bombs in close proximity to each other indicates that the volcanics were probably laid down close to the vents through which they were extruded. The presence of interbedded sediments indicates that at least part of the formation was laid down in water.

The thickness of the Camboon Andesite in the Gogango Range is not known, but is probably of the order of several thousand feet. A reliable estimate can not be made as extensive faulting probably caused considerable repetition of section.

The Camboon Andesite is of Lower Permian age as indicated by marine fossils in sedimentary interbeds in the Monto Sheet area (Dear, pers. comm.), and can be correlated with the Lower Bowen Volcanics of the northern Bowen Basin. No fossils have been found in the unit in the Gogango Range.

Rannes Beds

The name 'Rannes Altered Rocks' was first used by Dunstan (1901) to describe the slatey rocks in the Rannes Hill area, 20 miles east-north-east of Baralaba. Dunstan included these rocks in the 'Gympie Formation'. Reid and Morton (1928) used the name 'Rannes Series' for the rocks in the Gogango Range and correlated them with the Lower Palaeozoic 'Emu Park and Anakie Series'. In this report, the unit will be referred to as Rannes Beds. The type area is in the Rannes Hill area, north-west of Rannes.

Figure 1: Normal folds in Rannes Beds. Road cutting, Gogango Range, 4 miles west of Grantleigh Siding. (Neg. No. g/5352).

Figure 2: Recumbent folds in Rannes Beds. Road cutting, Gogango Range, $3\frac{3}{4}$ miles west of Grantleigh Siding. (Neg.No.g/5468).

The Rannes Beds crop out in a north-north-west trending belt in the centre of the Gogango Range and in a narrow north trending belt east of the range near Rannes. The unit forms some of the most rugged and impenetrable terrain in the area. It is deeply incised by many creeks which give the unit its characteristic dendritic photo-pattern. The vegetation is generally moderately dense; brigalow scrub occurs in patches south of the Fitzroy River.

The Rannes Beds consist of a large variety of rock types, mainly shale, siltstone, argillite and slate but including greywacke, sub-greywacke, tuffaceous sandstone, conglomerate and limestone (Appendix 6). The most accessible and best exposures of the unit are in the road cuttings along the main Duaringa-Rockhampton road. The shale, siltstone, argillite and slate are generally pale greenish-grey to grey and have a wide distribution throughout the Gogango Range. At Pt. 888, 8 miles west of Grantleigh Siding, the siltstone contains flattened nodules up to 18 inches in diameter. Analysis of a specimen from this locality indicates the presence of 27% P_2O_5 (Appendix 5). Interbedded with the fine-grained sediments and slate are thin beds of greywacke, subgreywacke and tuffaceous sandstone. In places, the unit includes thick, probably lenticular beds of conglomerate which cannot be traced over any great distance. The pebbles of the conglomerate are up to 6 inches in diameter and consist mainly of volcanic rock. The Rannes Beds contain some discontinuous beds of calcarenite and pebbly limestone up to 200 feet thick. The pebbles are volcanic rock fragments. The only recognizable fossils in these rocks are crinoid stem fragments (Appendix 3). The limestones have in most places been sheared and are partly or wholly recrystallized. Most of the limestone outcrops occur at or close to the contact of the Rannes Beds and the underlying Camboon Andesite.

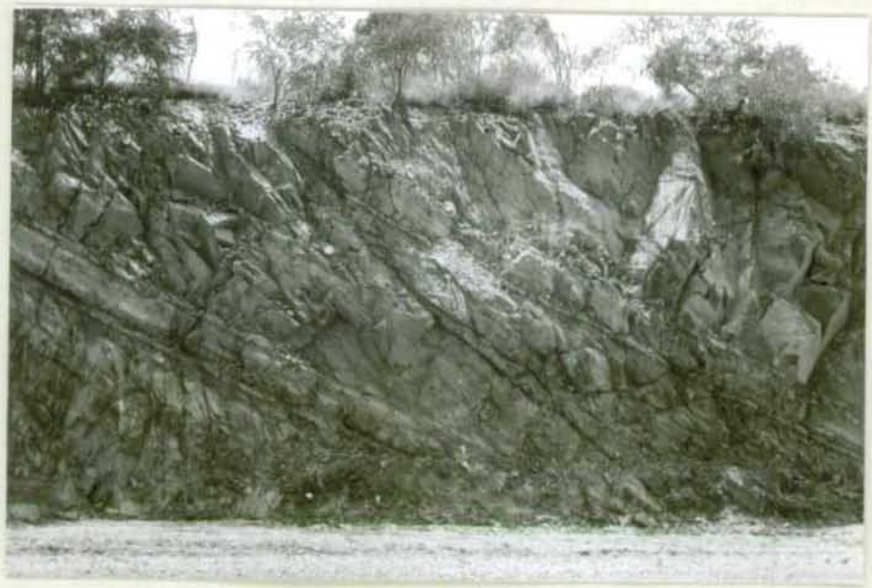


Figure 3: Small thrust in Rannes Beds. Road cutting, Gogango Range, 5 miles west of Grantleigh Siding. (Neg. No. M323A).

The Rannes Beds are the most intensely deformed unit in the Gogango Range (Figures 1,2,& 3). It consists mainly of tightly folded argillaceous sediments which show either slatey cleavage or fracture cleavage. The more competent sandy interbeds are jointed normal to bedding. In the northern and western parts of the Gogango Range, the cleavage generally dips steeply east suggesting that most of the tight folds are overturned to the west. North of Rannes, a second period of deformation of the Rannes Beds is indicated by gentle folding of the cleavage planes. Small faults are common throughout the Gogango Range (Figure 3). Quartz veining is common in the Rannes Beds and generally associated with the faulting.

The Rannes Beds overlie the Camboon Andesite in the Thuriba Anticline and in the small anticlines to the east. The two units interfinger in the east of the Gogango Range, particularly south-west of Wowan, where in many places it is difficult to separate them. At Muruguran Siding and east of Rannes, the Rannes Beds are unconformably overlain by the Rookwood Volcanics. Along the western and north-eastern edges of the Range, the unit is overlain by the Back Creek Group. The relationship between the Back Creek Group and the Rannes Beds is probably disconformable or unconformable, but because of poor outcrop this could not be proved.

The environment of deposition of the Rannes Beds is not known. At least part of the unit was laid down under marine conditions as indicated by the presence of crinoidal limestones. The stratigraphic position and lithology of the Rannes Beds suggest that the unit was laid down in water adjacent to areas of active vulcanism.

The thickness of the Rannes Beds is not known because of the intense deformation, but is thought to be of the order of several thousand feet.

The Rannes Beds are Lower Permian as they overlie and interfinger with the Lower Permian Camboon Andesite.

Rookwood Volcanics

The name Rookwood Volcanics was first used by Malone et al. in 1963 in the Duaringa 1:250,000 Sheet area. The formation was named after Rookwood Creek, a tributary of the Fitzroy River. The type area of the formation is in the Rookwood Creek area.

In the Gogango Range area, the formation crops out only along the eastern margin of the range near Muruguran Siding and east and south-east of Rannes. It forms rounded lightly timbered hills. The areas of outcrop can be distinguished easily on the airphotos owing to their comparatively light tone photo pattern.

In the area mapped, the formation consists mainly of spilitic lavas with some agglomerate, as is the case in the type area. The spilites are massive, fine-grained, grey green rocks. Some are porphyritic containing from 5% to 30% feldspar phenocrysts (Appendix 6). Pillow structures have been observed in both areas of outcrop in the Gogango Range. In places, greenish chert is present between the pillows.

The Rookwood Volcanics unconformably overlie the Rannes Beds and Camboon Andesite, South-west of Muruguran Siding, the volcanics occur in small isolated outcrops on both Camboon Andesite and Rannes Beds. In the type area in the Duaringa Sheet area, and in the Fitzroy River north-west of Grantleigh Siding, the Rookwood Volcanics are overlain by sediments of the Back Creek Group.

Inliers of Rannes Beds occur in deep gullies north-west of Muruguran Siding indicating that the Rookwood Volcanics are very thin in that area. South-east of Rannes and north of the Fitzroy River, the thickness is greater, possibly of the order of 2000 - 3000 feet.

The presence of pillow structures in the lavas indicates that at least part of the unit was extruded under water.

The Rookwood Volcanics overlie the Lower Permian Camboon Andesite and Rannes Beds, are overlain by the Upper Permian Back Creek Group, and are probably of Lower Permian age.

Oxtrack Formation

The name Oxtrack Formation was first published by Derrington, Glover and Morgan in 1959. The type area of the formation is in Oxtrack Creek, a tributary of the Dawson River in the Mundubbera Sheet area.

The formation crops out over a small area along the western edge of the Gogango Range area on the west limb and north and south plunges of the Thuriba Anticline. The unit has not been found in the east limb of the anticline nor anywhere else in the Gogango Range. The formation has a widespread distribution farther to the south in the Monto and Mundubbera Sheet areas.

In the Thuriba area, the outcrop of the formation is very poor. It consists of fossiliferous grey and light brown calcareous siltstone and richly fossiliferous partly recrystallized calcarenite containing volcanic rock fragments up to 1 inch in diameter. Rich faunas containing crinoids, corals, brachiopods, pelecypods and bryozoa were collected at several localities (Appendix 1).

The Oxtrack Formation overlies the Camboon Andesite, probably unconformably, and is overlain by the undifferentiated Upper Permian sediments of the Back Creek Group. The contact between these rocks and the Oxtrack Formation was not seen in the Thuriba Homestead area, but on the Monto and Mundubbera Sheet areas, they are conformable. The age of the unit is probably Upper Permian (Appendix 1).

The thickness of the Oxtrack Formation is not known due to poor outcrop, but probably of the order of 100 feet. Further to the south, in the Monto and Mundubbera Sheet areas, the thickness ranges from 90 to 500 feet. (Derrington and Morgan, in Hill and Denmead, p.205).

Undifferentiated Back Creek Group

In the Mundubbera Sheet area, Glover (1954) used the name Back Creek Formation for the Middle Bowen Beds, a Permian marine unit recognized throughout the Bowen Basin. The name was later changed to Back Creek Group and published by Derrington, Glover and Morgan (1959). The unit is named after Back Creek, a tributary of the Dawson River in the Cracow District. The type area is at Back Creek Station in the Mundubbera Sheet area.

The undifferentiated Back Creek Group crops out in a belt up to 4 miles wide along the western margin of the Gogango Range, and in isolated areas along its north-eastern margin. The sequence extends northerly across the Fitzroy River into the central part of the Duaringa Sheet area, where it was mapped as Middle Bowen Beds (Malone et al., 1963).

The Back Creek Group forms gently undulating to rugged hilly terrain and supports a moderately dense vegetation. The airphoto pattern of the unit is not distinctive; it is in most places similar to the pattern of the underlying Rannes Beds.

In the Gogango Range, the Back Creek Group consists of a sequence of subgreywacke and shale with minor conglomerate. Subgreywacke is the characteristic lithology. It is a dense, grey to brownish-grey, fine to medium-grained rock, consisting of quartz (5%-35%), lithic material (50%-75%) and feldspar (2%-5%) in a detrital matrix (5%-15%). The lithic clasts are mainly argillaceous material, but volcanic and metamorphic

rock fragments, quartzite, chert and granitic material are present (Appendix 6). The matrix is generally recrystallized. Thick beds of shale and conglomerate are interbedded with the greywacke. The best exposures of the conglomerate occur in the Fitzroy River near the junction of the Dawson and Mackenzie Rivers (Pt.897), near Edungalba Siding (Pt. 890), in a road cutting along the main Duaringa-Rockhampton road (Pt. 889) and east of Rio Homestead, just north of Pt. 899. Some of the beds are up to 100 feet thick. The conglomerates are fairly uniform in composition. Pebbles of subgreywacke are most common but it also includes clasts of quartz, quartzite, chert and volcanic rocks. Part of the conglomerate at Edungalba consists of well-rounded pebbles set in a sheared shale matrix. Shales, containing irregular stringers of sand, clusters of pebbles and wood fragments were observed at several localities (e.g. Pts. 898 & 889).

The outcrop of the Back Creek Group is generally poor. The best exposures are in the ranges 7 miles east of north and north-east of Mourangee Homestead Rio Homestead/and north-west of Thuriba Homestead. In these areas the outcrops in some creeks are large enough to show that the rocks are tightly folded and overfolded. Fold axes generally trend north-north-westerly and bedding dips range from 25° to 85°. The majority of dips are east-north-easterly, which may be due to extensive small scale isoclinal folding.

The undifferentiated Back Creek Group overlies the following units: the Oxtrack Formation in the Thuriba Anticline; the Rannes Beds along the western margin of the Gogango Range, north and south of the Thuriba Anticline; the Rookwood Volcanics in the Fitzroy River area; and the Camboon Andesite south of Grantleigh Siding. The relationship between the Back Creek Group and the underlying Rannes Beds is obscure. A distinct lithological difference exists between the units, but the stratigraphic boundary is folded and faulted and has not

been seen. The boundary between the units as shown on the accompanying geological map, is based on general lithological changes and photo interpretation. Subgreywackes, characteristic of the Back Creek Group, occur in areas mapped as Rannes Beds. Some of these may be outliers of Back Creek Group in folded with the sediments of the Rannes Beds.

In the Gogango Range, the Back Creek Group contains some unidentifiable plant material and, at locality DU 510, 4 miles north-west of Thuriba Homestead, a poor marine fauna has been recorded (Appendix 1). The fossils and lithology of the unit indicate that sedimentation probably took place in a shallow, near shore, marine environment.

The age of the Back Creek Group, in the Gogango Range is Upper Permian (Appendix 1). The thickness of the unit could not be measured because of intense deformation and poor outcrop. About 2000 feet is present in the centre of the Range (Pt.881), but the maximum thickness is probably much greater. Up to 15000 feet has been reported from the Monto Sheet area east of the Banana Fault (Derrington and Morgan in Hill and Denmead, pp.205-207).

Tertiary Sediments and Basalt

The earliest work on the Tertiary rocks in the Central Bowen Basin was done by Dunstan (1901) who referred to these rocks in the Duaringa area as the 'Nerang-Duaringa Series'. The name 'Duaringa-Emerald Series' was later used by Reid and Morton (1928). On the Geological Map of Queensland (1953), the name Duaringa Formation was used for the Tertiary rocks along the Dawson and Mackenzie Rivers on the Duaringa and Baralaba Sheet areas. No formal name was used in the preliminary editions of the Duaringa (Malone et al., 1963) and Baralaba (Olgers et al., 1964) Sheet areas.

The Tertiary sediments occur both east and west of the Gogango Range in steepsided mesas and tablelands. Outcrop is generally poor and confined to deep creeks and breakaways. The sediments consist mainly of silty and sandy claystone and white, yellow and buff sandstone, in places pebbly or conglomeratic. Most of the rocks have been lateritized. A basalt flow (Appendix 6), in part scoriaceous and interbedded with these sediments is exposed in the Don River 12 miles north-north-east of Baralaba.

The Tertiary rocks unconformably overlie the Permian strata and are in most places covered by sand deposits. The sediments east of the range are flat lying. In the west, and particularly in the Baralaba Town area, dip slopes of up to 20° occur. The undulating Tertiary surface is thought to represent an irregular surface within the laterite profile or a surface of lateritization rather than to have been caused by folding.

The thickness of the Tertiary deposits varies considerably. The thickness increases away from the Gogango Range , and Dunstan (1901) reports at least 600 feet in the Duaringa Bore, 10 miles west of the thin Tertiary deposits at Edungalba Siding. Similarly, thickening takes place east of the ranges into the Callide Valley where Reid (1940) reports at least 670 feet to be present.

The Tertiary sediments are probably fluviatile and lacustrine deposits which were mainly derived from the Gogango Range and deposited in the lowlands to the east and west.

David (1932) examined fish remains from the Duaringa Bore and assigned these to the Oligocene. Fossil fish remains were also examined by Hills (1934) who could only assign a Tertiary age to them.

Cainozoic Deposits

Undifferentiated Cainozoic Deposits (Cz) consisting mainly of reworked Tertiary sediments and laterite are widespread, particularly along the western edge of the Gogango Range.

Wide belts of alluvium (Cza) occur along the Dawson, Don and Dee Rivers. The thickness of the alluvium is not known.

Intrusions

West of Wowan, the Camboon Andesite is intruded by a series of irregularly shaped diorite masses which trend north-north-west. Mount Spencer, the highest peak in the Gogango Range, is made up of diorite (Appendix 6). The western contact of the Mount Spencer intrusion is conformable with sediments of the Camboon Andesite dipping easterly at about 50°; the intrusion is probably a sill. The intrusion consists mainly of fine-grained diorite and of a small amount of coarse-grained diorite. Both the fine-grained diorite and the volcanics and sediments of the Camboon Andesite are highly sheared and altered.

Fourteen miles east of Baralaba, the Back Creek Group is intruded by a mass of coarse-grained syenite and metamorphosed volcanics (Mount Cooper) (Appendix 6). No detailed work was done in the area. The volcanics are mainly intermediate to acid flows and agglomerates, and are dissimilar to the volcanics in the surrounding Permian sequence. They have been intruded and thermally metamorphosed by the syenite, which contains inclusions of the volcanics in varying degrees of assimilation. The age of neither the volcanics nor the syenite is known. The volcanics post-date the Back Creek Group which strikes into the volcanics and may be related to the numerous small trachyte dykes which cut the Back Creek Group south of Mount Cooper. The syenite post-dates the volcanics.

Historical Sketch

The oldest rocks in the Gogango Range are the Silurian-Devonian limestone with associated volcanics and sheared fine-grained sediments at Thuriba Homestead. These rocks are overlain by the Lower Permian Camboon Andesite. The relationship between the units is unconformable or faulted.

The Camboon Andesite was laid down partly on land and partly in water as indicated by the presence of sedimentary interbeds. The volcanism was accompanied by subsidence of the Gogango Range area, and marked the first stage of the development of the Bowen Basin.

The fine-grained sediments of the Lower Permian Rannes Beds were then laid down in an at least partly marine environment. Volcanism continued in places as indicated by the interfingering of the Camboon Andesite and the Rannes Beds, and the presence of tuffaceous sediments in the Rannes Beds.

After deposition of the Rannes Beds, the Gogango Range area was uplifted and erosion removed, in most places, part of the Rannes Beds. In the Thuriba Homestead area and south-east of Grantleigh Siding, the Rannes Beds were completely removed as the Back Creek Group directly overlies the Camboon Andesite in these areas.

Renewed subsidence occurred accompanied by submarine extrusion of the pillow lavas of the Rookwood Volcanics in a belt along the eastern edge of the Gogango Range. The pillow lavas were the last flow rocks extruded in the area.

The Camboon Andesite, Rannes Beds and Rookwood Volcanics are overlain by the Upper Permian part of the Back Creek Group. The basal formation of the Group in this area, the Oxtrack Formation, could only be recognized in the Thuriba Homestead area. The Group was laid down in a marine

near-shore environment. Part of the Gogango Range area was possibly above water and supplied some of the sediment.

After the deposition of the Upper Permian marine rocks, the basin lost its connection with the open sea and the Upper Bowen Coal Measures were laid down. These rocks were not deposited in the Gogango Range but crop out 10 miles to the south-west near Baralaba. In Coal Measures time, the Gogango Range probably formed part of the barrier between the Yarrol Basin to the east and the Bowen Basin to the west.

From the Upper Permian to the Tertiary, the area was subjected to erosion. Non-marine Tertiary sediments were subsequently laid down on either side of the Range.

The Permian sequence of the Gogango Range is intruded by diorite sills west of Wowan, and a syenite stock at Mount Cooper. The ages of these intrusions are not known.

The main periods of deformation of the rocks in the Gogango Range are Lower Permian, when the area was uplifted and eroded, and probably Upper Triassic, when the main orogenic phase of the Bowen Basin occurred. The fine-grained sediments of the Rannes Beds are the most intensely deformed and show evidence of two periods of folding. The Back Creek Group is also tightly folded. The axes of the minor and major structures in the Gogango Range trend north-north-west, parallel to the major trends of the Bowen Basin. Most of the dips measured in the area are easterly and the cleavage generally also dips steeply towards the east suggesting overturning of the western limbs of the generally tight folds. Numerous faults are indicated on the airphotos. Most of these are probably high angle reverse faults.

Economic Geology

Dunstan (1901) reported numerous small copper and gold shows in the Gogango Range. Abandoned workings are present on Woolein Creek approximately 6 miles south of Rannes, at Mount Hope and on Bottle Tree Creek. Production records are not available for any of the mining operations carried out in the area, but all were abandoned due to poor results. Dunstan (1901) also recorded the occurrence of manganiferous slates from the area north of the Fitzroy River and east of Balcomba Homestead (15 miles north-west of the Fitzroy River).

A phosphate analysis carried out on a nodule from nodular argillaceous rocks cropping out in the roadcutting at Pt.888 in the Duaringa-Rockhampton road, indicated 27% P_2O_5. Other samples collected throughout the area mapped contained less than 1% P_2O_5 (Appendix 5).

The water resources of the ~~area~~ ranges are not good but sufficient for stockwatering. Several wells and bores, producing potable water from shallow depth, are present in the volcanics, slates and alluvium. Large waterholes are present in the Fitzroy, Dawson and Don Rivers.

The extensive belts of Cainozoic alluvium in the area are potentially important sources of water.

REFERENCES

DAVID, T.W.E., 1932 - Explanatory notes to accompany a new geological map of the Commonwealth of Australia. Couns. sci. ind. Res.Aust.

DERRINGTON, S.S., GLOVER, J.J.E., and MORGAN, K.H., 1959 - New Names in Queensland Stratigraphy. Permian of the South-eastern Part of the Bowen Syncline. Aust.Oil Gas J., 5(8), 27-35.

DICKINS, J.M., MALONE, E.J., and JENSEN, A.R., 1962 - Subdivision and Correlation of the Middle Bowen Beds. Bur.Min.Resour.Aust. Rec., 1962/87 (unpubl.).

DUNSTAN, B., 1901 - The Geology of the Dawson and Mackenzie Rivers with special reference to the occurrence of anthracitic coal. Publ.geol.Surv. Qld, 155, 1-28.

GLOVER, J.J.E., 1954 - Geology of the Banana-Theodore - Cracow Area. Ass.Aust.Oilfields N.L. ATP 21P. Geol.Surv.Qld Auth.Rep., 45, (unpubl.).

HILL, DOROTHY, 1951 - Geology; in Handbook of Queensland. Aust.Ass.Adv. Sci., Brisbane.pp.13-24.

HILL, D.,and DENMEAD, A.K., (eds) 1960 - The Geology of Queensland. J. Geol.Soc.Aust., 7.

HILLS, E.S., 1934 - Tertiary freshwater fishes from southern Queensland. Mem.Qld Mus., 10 (4), 157-174.

MALONE, E.J., MOLLAN, R.G., OLGERS, F., JENSEN, A.R., and GREGORY, C.M. (B.M.R.), KIRKEGAARD, A.G., and FORBES, V.R., (Q.G.S.), 1963 - The Geology of the Duaringa and St. Lawrence 1:250,000 Sheet areas, Queensland. Bur.Min.Resour.Aust.Rec., 1963/60 (unpubl.).

OLGERS, F., WEBB, A.W., SMIT, J.A.J., and COXHEAD, B.A., 1964 - The Geology of the Baralaba 1:250,000 Sheet area, Queensland.Bur.Min.Resour. Aust.Rec. 1964/26 (unpubl.).

REID, J.H., 1940 - Geology and Hydrology of the Callide Valley, Queensland. Qld Govt Min.J., 41, 185-188.

REID, J.H., and MORTON, C.C., 1928 - Central Queensland Geological Section. Qld Govt Min. J., 29, 384-388.

APPENDIX I

PERMIAN MARINE MACROFOSSILS FROM THE THURIBA AREA

by

J.M. Dickins

During 1962 fossils were collected from five localities in this area (Dickins, 1963). Satisfactory conclusions on their identification and relationships were difficult because of tectonic distortion and because only a relatively few species were present and some of these were known to be long-ranging. The fauna also differed in some respects from any previously examined. On the basis of the possible occurrence of Cancrinella magniplica Campbell, 1953, it was suggested the fauna might belong to Fauna III of Dickins (in press). None of the evidence, however, precluded a younger or a slightly older age.

During 1963 fossils were collected from the additional localities Ba 825 and Ba 827, and the material from the five 1962 localities has been re-examined and compared with the collections made in 1963 from the Baralaba, Monto and Mundubbera Sheet areas.

For convenience, the identifications from the seven localities are listed below - the identifications from the 1962 localities have been changed slightly to conform to later information.

IDENTIFICATIONS

Du 158. Beside Power Line, 2 miles south-west of Thuriba Homestead, Duaringa Sheet.

Pelecypods

Plagiostoma? sp. nov.

Brachiopods

Neospirifer sp. A

Ingelarella cf. *ingelarensis* Campbell 1960

Licharewia? sp?

Bryozoans

Branching stenoporoids

Du 159. 1½ miles south-west of Thuriba Homestead, Duaringa Sheet.

Corals

Thamnopora sp.

Cladochonus sp.

Du 508. 3 miles north-west of Thuriba Homestead, Duaringa Sheet.

Pelecypods

"*Modiolus*" sp. ind.

Plagiostoma? sp.nov.

Brachiopods

Strophalosia cf. *clarkei* var. *minima* Maxwell 1954
(wide with moderately well-developed muscle platform in pedicle valve).

Ingelarella cf. *ingelarensis* or *mantuanensis* Campbell 1960.

Licharewia? sp?

Punctate or spinose spiriferoid

Terebratuloid

Stenoporoid Bryozoans

Corals

Cladochonus sp.

Du 510. 4½ miles north-west of Thuriba Homestead, Duaringa Sheet.

Stenoporoid Brybzoans

Corals

Thamnopora sp.

Cladochonus sp.

Du 511. 3 miles west-north-west of Thuriba Homestead, Duaringa Sheet.

Pelecypods

Atomodesma (Aphanaia) sp. (as in Oxtrack Formation)

Aviculopecten sp.

Streblopteria sp. ind.

Astartila or Astartidae gen. sp. nov.?

Brachiopods

Terrakea cf. solida (Etheridge & Dun) 1909

Cancrinella cf. magniplica Campbell 1953

Neospirifer sp. A.

Ingelarella cf. mantuanensis Campbell 1960

Cancellospirifer? sp.

Fenestellid Bryozoans

Single Corals

Crinoid Stems

Ba 825. 4 miles north-north-west of Thuriba Homestead, Duaringa Sheet.

Stenoporoid Bryozoans

Corals

Cladochonus sp.

Indeterminate brachiopod shells

Ba 827. 3½ miles north-north-west of Thuriba Homestead, Duaringa Sheet.

Brachiopods

Ingelarella cf. plana or mantuanensis Campbell 1960

Indeterminate brachiopod fragments.

CONCLUSIONS

All the localities are close together stratigraphically and on the basis of the faunas from the Baralaba, Monto and Mundubbera Sheet areas, the marine fossils from the Permian of the Thuriba area are not older than the Oxtrack Formation as restricted by Jensen, Gregory & Forbes (1964). Similar faunas are found at all the localities and in the Bowen Basin Atomodesma (Aphanaia) sp. from Du 511 is only known from the Oxtrack Formation and in the Clermont area (i.e. it is confined to Fauna IV). All the species, as far as they can be identified are found in the Oxtrack Formation and higher beds in the area to the south. The occurrence of Cancrinella cf. magniplica in beds younger than the Ingelara Formation is discussed in the report on the fossils from the Monto and Mundubbera Sheet areas (Dickins, 1964). R.E. Wass (in a letter) has examined the bryozoans from Du 158, Du 508 and Du 510 and considers that those from Du 508 and Du 510 are "similar to those found in the Oxtrack Formation". Those from Du 158 were too weathered for identification.

Lithologically Du 158, Du 508, Du 511, Ba 825 and Ba 827 fall within the limits of the Oxtrack Formation but Du 510 is found associated with dark siltstone and tuffaceous beds similar to the Barfield Formation. As shown elsewhere (Dickins, op.cit.) the faunas of the Oxtrack and Barfield Formations are closely related and belong to Fauna IV.

REFERENCES

DICKINS, J.M., 1963 - Appendix 1 in Malone, E.J., Mollan, R.G., Olgers, F., Jensen, A.R., Gregory, C.M., Kirkegaard, A.G., and Forbes, V.R., The Geology of the Duaringa and St. Lawrence 1:250,000 Sheet areas, Queensland. Bur.Min.Resour.Aust.Rec. 1963/60. 21 pp. (unpubl.).

DICKINS, J.M., 1964 - Appendix in Jensen, A.R., Gregory, C.M., and Forbes, V.R. Geology of the Taroom and the western third of the Mundubberra 1:250,000 Sheet areas. Bur.Min.Resour. Aust.Rec. 1964/ (unpubl.).

DICKINS, J.M., in press - Appendix in Malone, E.J., Corbett, D.W.P., and Jensen, A.R., Geology of the Mount Coolon 1:250,000 Sheet area. Bur. Min.Resour.Aust.Rep. 64.

APPENDIX 2

REPORT ON FOSSIL CORALS COLLECTED BY THE DUARINGA PARTY, 1962.

by

Dorothy Hill
(University of Queensland)

Du 600F: Limestone near Armagh Homestead, Duaringa 1:250,000 Sheet.

Heliolites daintreei, first group.

Favosites sp. cf. goldfussi

F. sp.

Tryplasma sp.

?Fletcheria sp. or ?Fletcherina sp.

Stromatoporoid

Algae

Age: Silurian or Lower Devonian. The fauna is of long-ranging types. H. daintreei ranges from Middle Silurian to Lower Middle Devonian. The large-celled Favosites is perhaps closer to the Lower and Middle Devonian F. goldfussi than to the Silurian and Lower Devonian F. gotlandica. The solitary Tryplasma indicates Silurian or Lower Devonian. The cylindrical fragments called ?Fletcheria or ?Fletcherina are probably from a fasciculate corallum, but having very negative characters such as extremely short septa they are difficult to place generically. The type species of Fletcheria is Silurian and that of Fletcherina is Devonian. On the whole I incline to a Lower Devonian age, but the possibility of a Silurian age cannot be discarded.

Du 948: Grey limestone. Two miles north-west of Craigilee Homestead, Duaringa 1:250,000 Sheet.

Lithostrotion ex.gr. stanvellense Etheridge.

Age: Lower Carboniferous, probably Visean.

Du 513/5: Near Armagh Homestead, Duaringa 1:250,000 Sheet.

Lithostrotion arundineum Eth.

Syringopora, 2 species

Age: Lower Carboniferous, probably Visean.

Du 160: Grey limestone near west bank of Fitzroy River, near Craigilee weir-crossing. Duaringa 1:250,000 Sheet.

Lithostrotion columnaro Etheridge

Symplectophyllum sp.

Du 146: Near Thuriba Homestead, Duaringa 1:250,000 Sheet area.

The limestone is very sheared and determination is hazardous.

The following were identified:

Alveolites? three fragments

Tryplasma? pieces of corallites from a cylindrical corallum

Cladochonus? pieces of corallites

Favosites sp. (very small fragment)

Ceriod Rugose coral, indet.

Solitary zaphrentoid Rugosa, gen. et.sp.indet.

Small, sparse fragments of branching Polyzoa.

As the first two genera mentioned are not known younger than the Devonian, and as both are common to Silurian and Devonian, I regard the age of the limestone as probably Silurian or Devonian.

APPENDIX 3

MICROPALAEONTOLOGICAL EXAMINATION OF LIMESTONE SAMPLES COLLECTED BY THE B.M.R. BARALABA PARTY (1963) (BOWEN BASIN)

by

P.J. Jones

Eight limestone samples from the Gogango Range, Bowen Basin, Queensland, have been etched in 20% acetic acid, and the insoluble residues have been examined for phosphatic and silicified fossils.

Ba 45: about 8 miles W. of Wowan (Duaringa 1:250,000 Sheet, Run 8, photo 5025).

Ba 220: about 7½ miles S.W. of Wowan (Monto 1:250,000 Sheet Run 1, photo 5022).

Ba 660: 8 miles S.S.W. of Wowan (Duaringa 1:250,000 Sheet Run 9, photo 5075).

Ba672)
: 7 miles S.E. of Wowan (Duaringa 1:250,000 Sheet)
Ba678) Run 9, photo 5075).

Ba 707: 7½ miles N.W. of Wowan (Duaringa 1:250,000 Sheet Run 8, photo 5028)

Ba 825: about 5 miles N. of Thuriba Homestead (Duaringa 1:250,000 Sheet, Run 9, photo 5073). Middle Bowen Beds.

Ba1080: about 1 mile W. of Muruguran(Duaringa 1:250,000 Sheet, Run 9, photo 5076).

No fossils were found in the insoluble residues, and consequently, no age determination can be given.

APPENDIX 4

PALYNOLOGICAL EXAMINATION OF SAMPLES FROM THE DUARINGA 1:250,000 SHEET AREA, 1963.

by

P.R. Evans

Samples Ba 889, Ba 898, Ba 914, submitted for palynological examination yielded no spores. They appeared to be sufficiently fresh for any contained spores to be unaffected by weathering, but their residues all showed signs of excessive carbonization.

APPENDIX 5

ESTIMATION OF PHOSPHATE ON SAMPLES OF BLACK SHALE FROM QUEENSLAND.

by

S. Baker

Following are results for the analysis for phosphate on Black Shale samples from Baralaba, Queensland, submitted by F. Olgers:

Field No.	Percent P_2O_5
Ba 898	less than 1.0
Ba 858/3	less than 1.0
Ba 914	less than 1.0
Ba 889	less than 1.0
Ba 888	27.0

APPENDIX VI

PETROGRAPHY

by

Beverley R. Houston
(Geological Survey of Queensland).

All specimens and slides are stored
in the Collections of the
Geological Survey of Queensland, Brisbane.

CAMBOON ANDESITE

Field No: Ba 35/2 GSQ/R 2372 Slide No.3228

Airphoto: Monto R2/5030

Location: Quarry East of Rannes Railway Stn.

Macro:- A massive, very fine-grained, greenish-grey rock.

Micro:-

Texture:- Extremely altered, amygdaloidal, porphyritic rock. The phenocrysts (about 5% of rock) are about 0.25 mm., pseudomorphic by secondary minerals. The crystal outlines are indistinct. The groundmass is intersertal to intergranular, about 0,02 mm.

Phenocrysts:- Epidote pseudomorphous after ?pyroxene: about 5% of rock.

Groundmass:- Plagioclase: about 50% of rock; acicular crystals, altered.

Epidote: about 15% of rock; granular.

Chlorite:about 20% of rock; filling interstices.

Opaques: about 5% of rock; fine, granular.

Amygdales:- Chlorite: about 5% of rock.

Origin:- Alteration and (possibly) minor shearing of a volcanic extrusive.

Name:- ALTERED ?BASALT.

Field No: Ba40 GSQ/R 2377 Slide No.3233

Air Photo: Duaringa R8/5025

Location: Mt Spencer, Gogango Range.

Macro:- A massive, sheared, fine-grained, thinly-bedded, light grey clastic rock. The strikes of the shearing and of the bedding appear to be about 10^{0} apart but the general direction of dip of the shearing and bedding is approximately the same.

Micro:-

Texture:- Microscopically, it is almost impossible to distinguish the bedding due to the masking effect of the shearing. About 5% original clasts, 0.02 to 0.09 mm. (dominantly about 0.04 mm.) occur; these are most elongate, oriented with their long axes parallel to the shearing. The matrix is micaceous with the long axes of the flakes parallel to the shearing.

Clasts:- Quartz and minor feldspar: about 5% of rock; strained; commonly with apatite inclusions.

Matrix:- Argillaceous: about 95% of rock; dominantly fine mica and clay minerals.

Origin:- Shearing of a sedimentary rock. Minor post-shearing recrystallisation, trending towards restoration of equilibrium, has produced the mica.

Name:- SHEARED SILTY MUDSTONE.

Field No. Ba40/1 GSQ/R 2378 Slide No. 3234
Air Photo: Duaringa R8/5025
Location : Mt Spencer Gogango Range

Macro:- A massive, fine-grained, grey-green rock with about 5% amygdales, about 2 mm. across.

Texture:- Extremely altered, porphyritic, amygdaloidal. The phenocrysts (about 5% of rock) are anhedral lath-shaped crystals, 1 to 1.5 mm. The groundmass is intersertal, about 0.1 to 0.25 mm.

Phenocrysts:- Plagioclase: about 5% of rock, saussuritised.

Groundmass:- Plagioclase (? andesine): about 40% of rock; commonly extremely altered.

Clinopyroxene: about 15% of rock; granular.

Chlorite: about 25% of rock; secondary, filling interstices.

Epidote: 5% of rock; secondary.

Calcite: 5% of rock; secondary.

Clinozoisite: minor; secondary.

? Hydrogrossularite: minor; secondary.

Amygdales:- Quartz: strained interlocking anhedra with associated chlorite and/or epidote and/or calcite.

Origin:- Alteration of a volcanic extrusive.

Name:- SPILITE.

Field No: Ba41/1 GSQ/R 2379 Slide No.3235
Air Photo:Duaringa R8/5025
Location :Pheasant Creek, Gogango Range.

Macro:- A massive, fine-grained, dark grey, amygdaloidal rock; the amygdales have been drawn out and aligned with their long axes parallel, probably by shearing.

Micro:-

Texture:- An altered, partially sheared, porphyritic rock containing distorted phenocrysts (up to 2+ mm.), inclusions and amygdales. The groundmass is intersertal, crudely fluidal, about 0.3 mm.

Phenocrysts:- Feldspar: partially replaced by secondary quartz, sericite, epidote, clinozoisite and chlorite.

Groundmass:- Andesine: abundant; altered.

Secondary Minerals: Sericite, epidote, and chlorite can be recognised.

Opaques: minor.

Inclusions:- Spotted ? Slate.

Amygdales:- Epidote, chlorite, etc.

Origin :- Shearing and alteration of a volcanic extrusive.

Name :- SHEARED XENOLITHIC ANDESITE.

Field No.: Ba41/2 GSQ/R2390 Slide No.3236
Air Photo: Duaringa, R8/5025
Location : Pheasant Creek, Gogango Range.

Macro:- Essentially similar to Ba41/1.

Micro:- Essentially similar to Ba41/1 except in the following details:-

1. Xenoliths of Spotted ? Slate do not occur.
2. A xenolith of recrystallised (granoblastic, about 0.08 mm.). Limestone occurs.
3. Amygdales are much more abundant in GSQ 3236 and, rarely, contain some calcite.
4. Phenocrysts are less abundant.
5. Granular epidote is more abundant in the groundmass.

Name:- SHEARED AMYGDALOIDAL ANDESITE

Field No. : Ba41/3 GSQ/R 2381 Slide No. 3237
Air Photo : Duaringa R8/5025
Location : Pheasant Creek, Gogango Range.

Macro:- A fissile, fine-grained, pinkish-grey, schistose rock traversed by fine veins, parallel to the schistosity.

Micro:-

Texture:- Extremely altered, sheared, comprising about 20% elongate (about 4 mm.) xenoliths in a volcanic host rock. The host rock is extremely altered but appears to have an original grain size of about 0.2 mm. The xenoliths are hornfelsic, about 0.04 mm.

Host rock:- Feldspar: relic altered crystals.
Mica: fine, crudely parallel flakes.
Carbonate: minor secondary.

Xenoliths:- Quartz-sericite hornfels: the mica is aligned parallel to the long axes of the fragments which are, in turn, parallel to the mica in the host rock.

Origin:- Shearing of a xenolithic volcanic extrusive. The xenoliths are of sedimentary rock which has been hornfelsed, presumably by the host rock. The mica originated as a result of the shearing and minor associated recrystallisation.

Name:- SHEARED XENOLITHIC VOLCANIC.

Field No.:Ba44 GSQ/R 2382 Slide No. 3238
Air Photo:Duaringa R8/5025
Location :Pheasant Creek, Gogango Range.

Macro:- A massive, fairly fine-grained, grey-green igneous rock.

Micro:-

Texture:- Somewhat altered, granitic, uneven-grained - 0.1 to 1.2 mm. The rock is traversed by fine veins; there is no evidence of shearing.

Constituents:- Andesine: about 70% of rock; subhedral and anhedral laths, totally or partially saussuritised.

Alkali feldspar: minor, partially replacing plagioclase crystals and in micrographic intergrowth with

Quartz: minor.

Mafic minerals: about 25% of rock; totally replaced by epidote, clinozoisite, chlorite and opaques.

Veins:- Quartz.

Origin:- Igneous, probably instrusive.

Name:- ALTERED DIORITE

Note:- Andesite and diorite can only be distinguished by field occurrence, not by composition. Texturally, the above rock is more like a diorite but could be an instrusive andesite - the final determination must depend on field relations if these are evident.

Field No.: Ba46 GSQ/R 2384 Slide No. 3240
Air Photo: Duaringa R9/5075
Location : Gogango Range,Cooneel Siding, Thuriba Homestead Road.

Macro:- A massive, very fine-grained, greenish-grey, sheared rock with blebs of green chlorite.

Micro:-

Texture:- Extremely altered, cloudy sheared core comprising fine (about 0.02 mm.) broken crystals and about 20% elongate (about 0.5 to 2 mm.) masses of chlorite fibres.

Constituents:- Feldspar: about 45% of rock; altered; with admixed secondary chlorite.

Pyroxene: about 25% of rock; broken, granular.

Epidote: about 5% of rock.

Carbonate: <5% of rock; secondary.

Opaques: <5% of rock.

Chlorite: about 20% of rock; elongate masses of fibres, possibly representing sheared phenocrysts.

Origin:- Shearing of a ?porphyritic volcanic rock, probably extrusive.

Name:- SHEARED ?BASALT

Field No. Ba47/1 GSQ/R 2385 Slide No. 3241
Air Photo: Duaringa R9/5075
Location : Gogango Range, Cooneel Siding, Thuriba Homestead Road.

Macro:- A massive, greenish-grey, medium-grained igneous rock.

Micro:-

Texture:- Porphyritic; the phenocrysts (about 30% of rock) are 0.5 to 2 mm., corroded by the groundmass to produce a pseudo ophitic texture. The groundmass is 0.02 to 0.04 mm., intersertal. About 5% of irregular amygdales.

Phenocrysts:- Clinopyroxene: about 25% of rock.

Feldspar: about 5% of rock; heavily sericitised and chloritised.

Groundmass:- Andesine-Labradorite: about 50% of rock; acicular crystals.

Chlorite: about 15% of rock.

Amygdales:- Chlorite: about 5% of rock.

Origin:- Volcanic, extrusive.

Name:- BASALT.

Field No. : Ba47/4 GSQ/R2388 Slide No. 3244.
Air Photo : Duaringa R9/5075.
Location : Gogango Range, Cooneel Siding, Thuriba Homestead road.

Macro:- A massive, fine-grained, greenish-grey igneous rock with minor fine amygdales.

Micro:- Essentially similar to Ba47/1.

Name:- BASALT.

Field No. Ba47/2 GSQ/R2386 Slide No. 3242
Air Photo: Duaringa R9/5075.
Location : Gogango Range, Cooneel Siding, Thuriba Homestead road.

Macro:- A massive, fine-grained, grey rock.

Micro:-

Texture:- Extremely altered, intersertal, 0.04 to 0.5 mm. Rare fine amygdales occur.

Constituents:- Plagioclase (including acid andesine): about 55% of rock; lath-shaped to acicular, commonly calcitised.

Clinopyroxene: about 15% of rock; granular and corroded prismatic.

Chlorite and calcite: about 30% of rock; filling interstices.

Amygdules:- Pennine chlorite.

Origin:- Spilitisation of a volcanic rock; the specimen is a fragment from a clastic rock, probably an agglomerate.

Name:- SPILITE.

Field No. Ba47/3 GSQ/R 2387 Slide No. 3243.
Air Photo: Duaringa R9/5075.
Location : Cooneel Siding, Thuriba Homestead Road. Gogango Range

Macro:- A massive, greenish-grey, coarse-grained clastic rock.

Micro:-

Texture:- Clastic; the clasts (about 90% of rock) are 2-10 mm., irregular in shape and commonly embayed. The matrix is very fine-grained, flow-banded.

Clasts:- Lithic material: about 90% of rock; the following can be recognised:-

Fine-grained intermediate to basic volcanics (possibly spilitic).
Crystal tuff.

Matrix:- Tuffaceous: about 10% of rock.

Origin:- Pyroclastic.

NAME:- LITHIC TUFF.

Field No. : Ba49 GSQ/R 2389 Slide No.3245.
Air Photo : Duaringa R9/5074.
Location : North of Thuriba Homestead.

Macro:- A massive, medium-grained, grey rock with abundant feldspar crystals about 1 mm.

Micro:-

Texture:- Altered, porphyritic; the phenocrysts (about 45% of rock) are 0.17 to 2 mm. (dominantly about 0.1 mm.), subhedral to anhedral. The groundmass is pilotaxitic, 0.08 to 0.1 mm. Rare amygdules occur.

Phenocrysts:- Andesine: about 45% of rock; replaced in part by calcite, chlorite and/or epidote.

Groundmass:- Plagioclase: about 30% of rock; altered acicular crystals.

Secondary minerals: chlorite, epidote, opaques and calcite can be recognised.

Amydgules:- Chlorite and calcite.

Origin:- Alteration of a basic igneous rock.

Name:- SPILITE.

Field No.: Ba 49/1 GSQ/R 2390 Slide 3246.
Air Photo: Duaringa R9/5074.
Location : North of Thuriba Homestead.

Macro:- A massive medium-grained, greenish-grey clastic rock.

Micro:- Essentially similar to Ba47/3 except in the following:-

1. The percentage of rock fragments in GSQ 3246 is only about 30%.

2. Rare crystal fragments occur.

3. The matrix contains abundant feldspar microlites.

Name:- CRYSTAL-LITHIC TUFF

Field No. : Ba49/2 GSQ/R 2391 Slide 3247.
Air Photo : Duaringa R9/5074.
Location : North of Thuriba Homestead.

Macro:- Essentially similar to Ba49.

Micro:- Essentially similar to Ba49 except in the following details:-

1. Ba 49/2is glomeroporphyritic.
2. Calcite is less abundant in Ba49/2.
3. Rare relic clinopyroxene crystals occur in Ba49/2.

Name:- SPILITE.

Field No. : Ba136 GSQ/R 2535 Slide 3418.
Air Photo : Duaringa R9/5075.
Location : Approx. 5½ miles E.N.E. of Thuriba Homestead.

Macro:- A massive, fine-to medium-grained, greenish-grey igneous rock with about 40% amygdales, 1 to 5 mm.

Micro:-

Texture:- Porphyritic, amygdaloidal. The amygdales (see above) make up about 40% of rock. The phenocrysts (about 10%) are 0.25 to 1 mm. The groundmass consists of a circular, granular and finely divided anhedra, cryptocrystalline to 0.02 mm.

Phenocrysts:- Albite-oligoclase: about 10% of rock; extremely altered to chlorite, epidote and calcite.

Groundmass:- The following can be recognised:-

Chlorite
Epidote - yellow, granular, brown, finely divided.
Calcite
Opaques (minor)
Relic plagioclase

Amygdales:- Calcite: predominant with minor quartz and yellow epidote.

Origin: Alteration (spilitisation) of a basic volcanic extrusive.

Name:- SPILITE

Field No. : Ba210 GSQ/R 2503 Slide 3386.
Air Photo : Monto R1/5021.
Location : 1½ miles N.W. Muruguran Siding.

Macro:- A massive, fine-to medium-grained greenish-grey, igneous rock.

Micro:- Essentially similar to Ba1002 except that Ba210 is more altered, believed due to shearing.

Name:- ALTERED BASALT

Field No.:Ba224 GSQ/R 2506 Slide 3389.
Air Photo:Duaringa R9/5075.
Location :7 miles W.S.W. of Wowan.

Macro:- A massive, fine-to medium-grained, greenish-grey, extremely altered igneous rock.

Micro:- Essentially similar to Ba 1055.

Name:- ALTERED SHEARED ANDESITE

Field No. : Ba225 GSQ/R 2498 Slide 3381.
Air Photo : Duaringa R9/5075.
Location : 7 miles W.S.W. of Wowan.

Macro:- A massive, fine-to medium-grained, slightly foliated greenish-grey, igneous rock.

Micro:- Essentially similar to Ba701 except in the following:-

1. Epidote is absent from Ba225.
2. Minor unreplaced clinopyroxene remains in Ba 225.

Name:- ALTERED ANDESITE

Field No. : Ba226/2 GSQ/R 2501 Slide 3384.
Air Photo : Duaringa R9/5075.
Location : 7 miles W.S.W. of Wowan.

Macro:- A massive, fine-to medium-grained, greenish-grey igneous rock.

Micro:-

Texture:- Intersertal to sub-ophitic, about 0.3 mm. Rare amygdules to 1.5 mm. occur.

Constituents:- Andesine: about 55% of rock; slightly altered.

Clinopyroxene: about 20% of rock; replaced in part by actinolite.

Epidote: about 10% of rock; associated with pyroxene.

Chlorite: about 10%; filling interstices.

Siderite: about 5% of rock; secondary distributed at random.

Amygdules:- Epidote: coarsely crystalline.

Origin:- Alteration of a volcanic extrusive or high level intrusive.

Name:- ALTERED ANDESITE

Similar rock Ba683A.

Field No. : Ba226/3 GSQ/R 2525 Slide 3408
Air Photo : Duaringa R9/5075
Location : 7 miles W.S.W. Wowan

Macro:- A massive, very fine-grained, dark greenish-grey igneous rock with abundant ? amygdales, 1 to 2 mm.

Micro:- Essentially similar to Ba862/1 except in the following details:-

1. Ba226/3 contains about 15% of strained quartz crystals (with intergrown core and outer reaction rim of chlorite and actinolite), up to 2 mm. Whether these are amygdales or xenocrysts cannot be determined. Calcite is commonly intimately associated.

2. Ba226/3 contains about 10% granular (about 0.04) epidote and clinozoisite.

Name:- SPILITE.

Field No. : Ba236 GSQ/R2499 Slide 3382
Air Photo : Duaringa R8/5025
Location : 6½ miles West of Wowan

Macro:- A massive, light grey, fine-to medium-grained, igneous rock.

Micro:- Essentially similar to Ba701 except in the following:-

1. Only about half of the Clinopyroxene in Ba236 is pseudomorphed by actinolite and chlorite.

2. Quartz (? secondary) is more abundant and epidote less abundant in Ba236.

Name:- ALTERED ANDESITE

Field No. : Ba239 GSQ/R2537 Slide 3420
Air Photo: Duaringa R8/5025
Location : 7 miles W.N.W. of Wowan

Macro:- A massive, fine-grained, medium grey, ? foliated crystalline rock with abundant phenocrysts.

Micro:- Essentially similar to Ba843/1 except in the following details:-

1. Phenocrysts are less abundant in Ba239 and are predominantly of strained quartz with minor potash feldspar and rare plagioclase.

2. Alteration of the feldspar has been to sericite and zeolite, essentially.

3. The groundmass is flow-banded and contains about 5% sericite and minor chlorite. Opaques are rare.

Name:- PORPHYRITIC RHYOLITE

Field No : Ba242 GSQ/R2509 Slide 3392
Air Photo: Duaringa R8/5025
Location : 8 miles N.N.W. of Wowan

Macro:- A massive, fine-to medium-grained, foliated grey crystalline rock.

Micro:- Essentially similar to Ba 1055 except in the following details:-

1. Relic unaltered clinopyroxene and feldspar are almost absent in Ba 242.
2. About 5% pools of secondary quartz with abundant inclusions of acicular actinolite are present in Ba 242.

Name:- ALTERED SHEARED ANDESITE

Field No : Ba607/1 GSQ/R2546 Slide 3429
Air Photo: Baraba R1/5002
Location : 7 miles N.N.W. of Rannes

Macro:- A massive, fine-grained, grey-green igneous rock traversed by fine veins.

Micro:-

Texture:- Porphyritic; the phenocrysts (about 30% of rock) are 0.2 to 1.5 mm, anhedral, lath shaped. The groundmass is a cloudy mass of secondary minerals. About 10% irregular amygdules (about 0.6 mm.) occur at random. Rare veins traverse the rock.

Phenocrysts:- Andesine: about 30% of rock; chloritised and (slightly) epidotised.

Groundmass:- The following can be recognised:-
Chlorite
Epidote (2 varieties)

Amygdules:- Pennite: about 10% of rock.

Veins:- Epidote: yellow.

Origin:- Alteration of volcanic, extrusive.

Name:- ALTERED ANDESITE

Field No : Ba607/5 GSQ/R2529 Slide 3412
Air Photo: Baraba R1/5 002
Location : 7 miles N.N.W. of Rannes

Macro:- A massive, very fine-grained, grey green igneous rock with abundant amygdales and phenocrysts up to 2 mm.

Micro:-

Texture:- Porphyritic; the phenocrysts (about 10% of rock) are anhedral, 0.5 to 1 mm. The groundmass is cryptocrystalline to 0.02 mm., consisting of acicular, granular and anhedral crystals. The amygdales (about 10%) are irregular, consisting of a fine mosaic, and commonly with an outer reaction rim.

Phenocrysts:- Oligoclase: about 10% of rock; in general extremely altered (as below).

Groundmass:- The following can be identified:-

Anctinolite (with minor relic pyroxene)
Epidote (finely divided, brown)
Chlorite
Plagioclase (relic)
Calcite

Amygdales:- Quartz with chlorite and/or zeolite and/or calcite.

Origin:- Alteration (spilitisation) of a basic volcanic extrusive.

Name:- SPILITE

Similar rock Ba1036

Field No : Ba608 GSQ/R2516 Slide 3399
Air Photo: Baralaba R1/5002
Location : 7 miles N. of Rannes

Macro:- A massive, fine-grained, greenish-grey rock with abundant irregular amygdales up to 5 mm.

Micro:-

Texture:- Intersertal, 0.2 to 1 mm. with some 10% irregular amygdales up to 5 mm.

Constituents:- Andesine: about 45% of rock; heavily chloritised.

Chlorite: about 10% of rock; interstitial.

Calcite: about 10% of rock; interstitial.

Opaques: about 10% of rock; interstitial.

Devitrified glass: about 10% of rock; interstitial.

Epidote: about 5% of rock; secondary.

Amygdales:- Calcite: about 10% of rock; in general with an outer rim of siderite.

Origin:- Alteration of a volcanic extrusive.

Name:- ALTERED ANDESITE

Field No : B a610C GSQ R2531 Slide 3414
Air Photo: Baralaba R1/5002
Location : 7 miles N. of Rannes

Macro:- A massive, fine-grained, extremely altered, green igneous rock.

Micro:- Essentially similar to Ba607/5 except in the following:-

1. Amygdales are absent from Ba610C; chlorite/epidote make up about 2% of rock.
2. Oligoclase phenocrysts (0.08 to 1 mm.) make up about 40% of Ba610C.
3. Veins of crystalline(about 0.5 mm.) calcite traverse BA610C at random.

Name:- SPILITE

Field No : Ba616 GSQ/R 2547 Slide 3430
Air Photo: Baralaba R1/5002
Location : 6 miles N.W. Rannes

Macro:- A massive, fine-grained, purplish-grey igneous rock with abundant phenocrysts to 1 mm.

Micro:- Essentially similar to Ba649B except that the feldspar phenocrysts are more heavily altered (sericitised).

Name:- ALTERED ANDESITE

Field No : Ba622 GSQ/R 2647 Slide 3528
Air Photo: Baralaba R1/5002
Location : 3 miles N.W. Rannes

Macro:- A massive very fine-grained, light grey layered rock.

Micro:- An indeterminate rock, possibly originally a volcanic/mudstone conglomerate. The rock appears to have been sheared and now comprises coarse flattened fragments of cherty mudstone and heavily silicified volcanic material.

Name:- Silicified ? SHEARED VOLCANIC ? CONGLOMERATE

Field No : Ba623 GSQ/R 2530 Slide 3413
Air Photo: Baralaba R1/5002
Location : 2½ miles N.W. Rannes

Macro:- A massive, fine-to very fine-grained greenish-grey crystalline rock.

Micro:- Essentially similar to Ba607/5 except in the following:-

1. Amygdales are not abundant in Ba623.
2. Numerous phenocrysts of a mafic mineral, pseudomorphed by secondary serpentine are present in Ba623.

Origin:- The parent rock may have been olivine-bearing.

Name:- SPILITE

Field No : Ba632 GSQ/R 2515 Slide 3398
Air Photo: Baralaba R1/5002
Location : 7 miles N. of Rannes

Macro:- A massive fine-grained, purplish-grey igneous rock with coarse amygdales.

Micro:-

Texture:- Essentially hypidiomorphic-granular, 0.3 to 0.6 mm. About 5% ? xenocrysts (= amygdales) (up to 4 mm.) are present.

Constituents:- Andesine: about 55% of rock; altered, essentially chloritised.

Chlorite: about 15% of rock; fibrous, interstitial; with minor associated epidote.

Quartz: about 10% of rock; interstitial.

Opaques: about 10% of rock; interstitial.

Albite: about 5% of rock; anhedral crystals and interstitial pools.

? Xenocrysts:- Quartz: about 5% of rock; strained anhedra surrounded by reaction rims of chlorite.

Origin:- Alteration of a volcanic extrusive. The quartz and albite appear to be primary.

Name:- ALTERED ANDESITE

Field No : Ba633 GSQ/R 2510 Slide 3393
Air Photo: Baralaba R1/5002
Location : 7½ miles N. of Rannes

Macro:- A massive, fine-to medium-grained, greenish-grey, igneous rock.

Micro:-

Texture:- Intersertal to subophitic, 0.025 to 1 mm., dominantly about 0.5 mm.

Constituents:- Andesine: about 55% of rock; extremely sericitised.

Clinopyroxene: about 25% of rock; replaced in part by secondary actinolite and minor chlorite.

Chlorite: about 10% of rock; filling interstices.

Siderite: about 5% of rock; secondary.

Quartz: about 5% of rock; interstitial pools of fine anhedra, apparently secondary.

Epidote: minor; secondary.

Origin:- Hydrothermal alteration of a volcanic ? intrusive (high level) or extrusive.

Name:- ALTERED ANDESITE

Similar rock Ba634.

Field No : Ba634 GSQ/R 2512 Slide 3395
Air Photo: Baralaba R1/5002.
Location : 7½ miles N. of Rannes.

Macro:- A massive, fine-to medium-grained, blue-grey igneous rock.

Micro:- Essentially similar to Ba633 except in the following details:-

1. Ba634 is slightly coarser-grained.
2. Ba634 contains slightly less pyroxene.

Name:- ALTERED ANDESITE

Field No : Ba636 GSQ/R 2558 Slide 3441
Air Photo: Baralaba R2/5096
Location : 1 mile E. of "Bardia" Homestead.

Macro:- A massive, uneven-grained, purplish-grey clastic rock with clasts up to 10 mm.

Micro:-

Texture:- Clastic; the clasts (about 45% of rock) are irregular, embayed, 0.3 to 10 mm. The matrix is very fine-grained.

Clasts:- Lithic material: about 45% of rock, essentially ironstained or clinozoisite-epidote rich volcanics.

Matrix:- Argillaceous (? tuffaceous): about 55% of rock; very difficult to distinguish from clasts.

Origin:- ? Sedimentary. Derived from the abrasion of volcanic material.

Name:- LITHIC TUFF

Field No : Ba638 GSQ/R 2514 Slide 3397
Air Photo: Baralaba R2/5096
Location : 2 miles S.W. of Rannes.

Macro:- Essentially similar to Ba1002.

Micro:- Apparently essentially similar to Ba1002 but the alteration is extreme and the rock now comprises coarse poikilitic pyroxene with very fine sericite, epidote actinolite and siderite.

Name:- ALTERED SHEARED ? BASALT

Field No : Ba641 GSQ/R 2560 Slide 3443
Air Photo: Baralaba R2/5096
Location : 1½ miles S.W. of Rannes.

Macro:- A massive, medium-to coarse-grained, grey-green, clastic rock.

Micro:-

Texture:- Clastic; the clasts (about 90% of rock) are broken crystals (0.04 to 4 mm.) and distorted irregular lithic grains (0.5 to 4 mm.); the interstices are filled with microcrystalline cement.

Clasts:- Plagioclase: about 45% of rock; heavily chloritised.
Clinopyroxene: about 30% of rock; slightly altered.
Lithic material: about 20% of rock; chloritic (? volcanic).

Cement:- Chlorite with minor epidote about 10% of rock.

Origin:- ?Hydrothermally altered pyroclastic.

Name:- ALTERED LITHIC-CRYSTAL TUFF

Field No : Ba649B GSQ/R2545 Slide 3428
Air Photo: Baralaba R1/5002
Location : 9 miles N.W. of Rannes.

Macro:- A massive, fine-grained, purplish-grey, igneous rock with about 30% phenocrysts up to 2 mm.

Micro:-

Texture:- Porphyritic; the phenocrysts (about 40% of rock) are subhedral, lath-shaped, 0.15 to 1 mm. The groundmass is intersertal, about 0.04 mm. Rare amygdules are present.

Phenocrysts:- Andesine: about 40% of rock; somewhat altered.

Groundmass:- The following can be recognised:-

Plagioclase)
Chlorite)
Epidote) about 55% of rock.
Opaques)
Calcite)
Sericite)

Amygdules:- Chlorite and/or epidote: about 5% of rock.

Origin:- Alteration of a volcanic extrusive.

Name:- ALTERED ANDESITE

Similar rocks Ba616, Ba823, Ba1057.

Field No : Ba654 GSQ/R 2513 Slide 3396
Air Photo: Baralaba R1/5002
Location : 1½ miles N.W. of Muruguran Siding.

Macro:- A massive, fine-grained, green and grey crystalline rock.

Micro:- Essentially similar to Ba210 except that Ba654 contains less pyroxene crystals which are more fractured but less altered.

Name:- ALTERED BASALT

Field No : Ba654B GSQ/R 2567 Slide 3449
Air Photo: Baralaba R1/5002
Location : 1½ miles N.W. of Muruguran Siding.

Macro:- A massive, very fine-grained, medium-grey igneous rock with about 30% subhedral to anhedral phenocrysts, up to 10 mm.

Micro:- An extremely altered volcanic extrusive consisting predominantly of chlorite.

Name:- ALTERED ? ANDESITE

Field No : Ba656B GSQ/R 2644 Slide 3525
Air Photo: Baralaba R1/5002
Location : 7 miles N. of Rannes.

Macro:- A foliated, coarse-uneven-grained, greenish-grey clastic rock with pebbles up to 4 mm.

Micro:- Essentially similar to Ba890 except in that:-

1. Feldspar clasts are present while quartz is rare in Ba656B.
2. The lithic fragments in Ba656B are dominantly volcanic.

Name:- Foliated Slightly Recrystallised PEBBLY LITHIC GREYWACKE

Field No : Ba658B GSQ/R 2614 Slide 3495
Air Photo: Duaringa R9/5075
Location : 7 miles W.S.W. of Wowan.

Macro:- A massive, fine-grained, light grey slaty rock.

Micro:-

Texture:- Cryptocrystalline; there is a marked parallelism of very fine stringers of micaceous material.

Constituents:- Quartz

Mica: Unidentifiable.

Origin:- Regional metamorphism and ? silicification of a fine-grained sediment.

Name:- SLATE

Field No : Ba659 GSQ/R 2612 Slide 3493
Air Photo: Duaringa R9/5075
Location : 7½ miles W.S.W. of Wowan.

Macro:- A massive, very fine-grained, blue-grey rock.

Micro:-

Texture:- Cryptocrystalline to microcrystalline with a vague bedding.

Constituents:- Quartz: with apatite inclusions, to 0.02 mm.

Chert:

Argillaceous material:

Origin:- Silicification of a sediment.

Name:- CHERTY MUDSTONE

Field No : Ba659B GSQ/R 2613 Slide 3494
Air Photo: Duaringa R9/5075
Location : 7½ miles W.S.W. of Wowan.

Macro:- A massive, fine-grained, foliated, light grey clastic rock.

Micro:-

Texture: Essentially clastic containing about 15% somewhat corroded clasts, 0.02 to 0.2 mm. (dominantly about 0.05 mm.) in a cryptocrystalline lepidoblastic matrix.

Clasts:- Quartz: predominant; with abundant apatite inclusions.
Feldspar: minor.

Matrix:- Chert
Mica

Origin:- Regional metamorphism and ? silicification of a silty mudstone.

Name:- ? SLATE

Field No : Ba663 GSQ/R 2511 Slide 3394
Air Photo: Duaringa R9/5075
Location : 7 miles S.W. of Wowan.

Macro:- A massive, fine-to medium-grained grey-green igneous rock.

Micro:- Essentially similar to Ba633 except in the following details:-

1. Pyroxene is less abundant and less altered in Ba663.
2. The andesine in Ba663 is less altered.
3. Quartz is absent from Ba663.

Name:- ALTERED ANDESITE

Field No : Ba667 GSQ/R 2528 Slide 3411
Air Photo: Duaringa R9/5075
Location : 7 miles S.W. of Wowan.

Macro:- A massive, very fine-grained, extremely weathered green crystalline rock.

Micro:- Essentially similar to Ba 862/1

Name:- SPILITE

Field No : Ba672 GSQ/R 2639 Slide 3520
Air Photo: Duaringa R9/5075
Location : 7½ miles S.W. of Wowan.

Macro:- A massive, foliated, light grey clastic rock with about 60% dark grey clasts to 5 mm.

Micro:-

Texture:- Originally clastic, recrystallised in part. The clasts (about 60% of rock) are 0.5 to 5 mm. (dominantly about 2 mm.) and are bent, broken and corroded. The cement is recrystallised and consists of parallel elongate anhedra 0.04 to 0.08 mm. About 5% parallel micaceous stringers are aligned parallel to the long axes of the anhedra.

Clasts:- Calcite:- about 60% of rock; single crystals, very cloudy.

Cement:- Calcite: about 35% of rock; recrystallised.

Mica: about 5% of rock; recrystallised argillaceous material from a lime mud.

Origin:- Foliation and minor recrystallisation of a sediment.

Name:- Foliated CALCIRUDITE.

Field No : Ba673 GSQ/R 2603 Slide 3484
Air Photo: Duaringa R9/5075
Location : 7½ miles S.W. of Wowan.

Macro:- A very fine-grained, red-brown, micaceous schistose rock.

Micro:- Essentially similar to Ba698A except in the following details:-

1. Minor quartz is present in Ba673.
2. Minor chlorite is present in Ba673 intimately associated with the sericite which is, in general, very heavily ironstained.

Name:- MICA SCHIST

Field No : Ba677 GSQ/R 2538 Slide 3421
Air Photo: Duaringa R9/5075
Location : 7½ miles S.S.W. of Wowan.

Macro:- A massive, fine-to medium-grained, grey-green, foliated crystalline rock with abundant phenocrysts.

Micro:- Essentially similar to Ba843/1 except in the following details:-

1. Strained quartz phenocrysts occur also in Ba677.
2. The feldspar crystals in Ba677 are heavily altered, and are almost completely replaced by sericite and minor muscovite and epidote.
3. Opaques are almost totally absent but minor secondary sericite muscovite and epidote occur in the groundmass.
4. The rock Ba677 appears to have been very slightly sheared.

Name:- Slightly Sheared PORPHYRITIC RHYOLITE

Field No : Ba680A GSQ/R2620 Slide 3501
Air Photo: Duaringa R9/5075
Location : 7 miles S.W. of Wowan.

Macro:- A massive, fine-grained, thinly bedded, light grey clastic rock.

Micro:-

Texture:- Originally clastic; the clasts (about 40% of rock) are corroded, of low to moderate sphericity, 0.04 to 0.15 mm. (dominantly about 0.08 mm.). The matrix is microcrystalline, granoblastic. The bedding is distinguished by parallelism of elongate clasts.

"Clasts":- Plagioclase: about 25% of rock; altered.

Quartz: about 15% of rock.

Chlorite: dominant.

Quartzofeldspathic material

Epidote: finely divided, occurring as long stringers.

Origin:- Partial recrystallisation of a pyroclastic.

Name:- Recrystallised CRYSTAL TUFF .

Similar rocks are Ba777, Ba777/1.

Field No : Ba683A GSQ/R 2504 Slide 3387
Air Photo: Duaringa R8/5025
Location : 5½ miles S.W. of Wowan.

Macro:- A massive, fine-to medium-grained greenish-grey igneous rock.

Micro:- Essentially similar to Ba226/2 except in the following:-

Ba683A is much more altered, granular secondary epidote calcite being especially abundant. The original crystals are fractured and bent, apparently due to shearing.

Name:- ALTERED SHEARED ANDESITE

Field No : Ba693 GSQ/R 2556 Slide 3439
Air Photo: Duaringa R8/5025
Location : 7½ miles W. of Wowan.

Macro:- A massive, very fine-grained, light grey, bedded rock with dendritic staining.

Micro:-

Texture:- The bedding is indistinct microscopically and appears to be a reflection of very minor ranges in grain size percentage composition. Clastic; the clasts (about 80% of rock) are essentially broken crystals, 0.02 to 0.1 mm. (dominantly about 0.04 mm.). The interstitial material is very finely divided.

Clasts:- Andesine: about 80% of rock; altered in part.

Matrix:- A cloudy mass consisting of chlorite, epidote, clinozoisite and calcite.

Origin:- Sedimentary; derived from volcanic material.

Name:- CRYSTAL SILTSTONE

Similar rock Ba702A

Field No : Ba696 GSQ/R 2542 Slide 3426
Air Photo: Duaringa R8/5025
Location : 8½ miles W. of Wowan.

Macro:- A massive, fine-grained, purplish-grey igneous rock with about 10% altered green amygdales.

Micro:-

Texture:- Intersertal, 0.03 to 0.5 mm. with about 10% parallel elongate amygdales.

Constituents:- Albite: about 75% of rock; extremely altered.

Secondary minerals: about 15% of rock; filling interstices:- 2 varieties of epidote together with chlorite and opaques.

Amygdales:- Chlorite and epidote: about 10% of rock.

Shearing:- There is minor evidence of slight localised shearing.

Origin:- Slight shearing and alteration of a volcanic extrusive.

Name:- SHEARED ALTERED ? TRACHYTE.

Field No : Ba698A GSQ/R 2602 Slide 3483
Air Photo: Duaringa R8/5025
Location : 8½ miles W.N.W. of Wowan.

Macro:- A very fine-grained, light grey, schistose rock.

Micro:-

Texture:- Lepidoblastic, microcrystalline with about 5% augen to 0.04 mm.

Constituents:- Sericite: about 95% of rock.

Epidote: about 5% of rock; finely divided, brown occurring as augen.

Opaques: minor.

Origin:- Regional. Metamorphic.

Name:- SERICITE SCHIST.

Field No : Ba699 GSQ/R 2569 Slide 3450
Air Photo: Duaringa R8/5025
Location : 8½ miles W. of Wowan.

Macro:- A massive, fine-grained, medium-grey, foliated rock with abundant carbonate amygdales.

Micro:- A sheared volcanic extrusive rock consisting of extremely altered acid feldspar laths, abundant parallel calcite stringers and unidentifiable argillaceous material.

The amygdales are of quartz (? secondary) and calcite.

Name:- SHEARED VOLCANIC.

Similar rock Ba1026/2.

Field No : Ba701 GSQ/R 2497 Slide 3380
Air Photo: Duaringa R8/5025
Location : 8 miles W. of Wowan.

Macro:- A massive, fine-to medium-grained, greenish-grey igneous rock.

Micro:-

Texture:- Uneven-grained, consisting essentially of anhedral lath-shaped and prismatic crystal and interstitial pools, 0.5 to 3 mm. (dominantly about 2 mm.).

Constituents:- Andesine: about 50% of rock; extremely sericitised.

Actinolite: about 35% of rock; ragged crystals, Chloritised in part (pseudomorphous after pyroxene).

Quartz: about 5% of rock; interstitial, ? secondary.

Epidote: about 10% of rock; secondary.

Siderite: minor; with associated opaques.

Origin:- Hydrothermal alteration and probable minor shearing of a volcanic, ? intrusive rock.

Name:- ALTERED ANDESITE.

Similar rocks Ba225, Ba236.

Field No : Ba702A GSQ/R 2557 Slide 3440
Air Photo: Duaringa R8/5025
Location : 7 miles W. of Wowan.

Macro:- Essentially similar to Ba693.

Micro:- Essentially similar to Ba693 except that the grain size of [illegible] is slightly greater.

Name:- CRYSTAL SILTSTONE.

Field No : Ba703 GSQ/R 2507 Slide 3390
Air Photo: Duaringa R8/5024
Location : 9 miles W.N.W. of Wowan.

Macro:- A massive, fine-to medium-grained, greenish-grey, foliated crystalline rock.

Micro:- Essentially similar to Ba1055, except in the following details:-

1. The original rock was much coarser-grained than Ba1055 (cf. Ba701).
2. Actinolite is much more abundant and clinozoisite less abundant in Ba703.

Name:- ALTERED SHEARED ANDESITE.

Field No : Ba707A GSQ/R 2508 Slide 3391
Air Photo: Duaringa R8/5024
Location : 13 miles S.W. of Grantleigh Siding.

Macro:- A massive, fine-to medium-grained greenish-grey foliated rock.

Micro:- Essentially similar to Ba1055 except in the following details:-

1. Coarse pyroxene crystals are more abundant in Ba707A and are altered to a much greater degree.
2. Clinozoisite is less abundant in Ba707A.
3. Minor epidote is present in Ba707A.

Name:- ALTERED SHEARED ANDESITE.

Field No : Ba707B GSQ/R 2610 Slide 3491
Air Photo: Duaringa R8/5024
Location : 13 miles S.W. of Grantleigh Siding

Macro:- A massive, fine-grained, greenish-grey foliated rock with elongate, parallel dark green bodies.

Micro:- A fine-grained mass of secondary minerals including:-

Epidote - 2 varieties
Chlorite - 1 variety
Quartz

The dark bodies seen in hand specimen consist of chlorite formed by the shearing and recrystallisation of original amygdules.

Name:- SHEARED VOLCANIC.

Field No : Ba713A GSQ/R2541 Slide 3424
Air Photo: Duaringa R7/5099
Location : 9 miles S.E. Grantleigh Siding.

Macro:- A massive, fine-grained, buff-coloured, igneous rock.

Micro:-

Texture:- Pilotaxitic, about 0.6 to 1 mm.

Constituents:- Albite and potash feldspar: about 95% of rock; altered in part to clay minerals.

Quartz: about 5% of rock; interstitial.

Opaques: accessory.

Origin:- Volcanic extrusive or high-level intrusive.

Name:- ALTERED TRACHYTE.

Field No : Ba717 GSQ/R 2542 Slide 3425
Air Photo: Duaringa R7/5099
Location : 10½ miles S.E. of Grantleigh Siding.

Macro:- A massive, fine-grained, grey-green, foliated crystalline rock containing abundant parallel elongate chlorite 'blebs'.

Micro:- Essentially similar to Ba46, except that Ba717 is finer-grained. It is SUSPECTED that the feldspar is albite and the rock spilitic.

Name:- SHEARED ALTERED (? SPILITE) BASALT.

Field No : Ba777 GSQ/R 2621 Slide 3502
Air Photo: Monto R2/5030
Location : 4 miles south of 'Rannes' Homestead.

Macro:- A massive, fine-grained, thinly-bedded, grey clastic rock.

Micro:- Essentially similar to Ba680A.

Name:- Recrystallised CRYSTAL TUFF.

Field No : Ba777/1 GSQ/R 2625 Slide 3506
Air Photo: Monto R2/5030
Location : 4 miles south of 'Rannes' Homestead.

Macro:- A massive, fine-grained, thinly-bedded, grey clastic rock.

Micro:- Essentially similar to Ba680A except that Ba777/1 is finer-grained and minor epidote is present.

Name:- Recrystallised CRYSTAL TUFF.

Field No: Ba788 GSQ/R 2622 Slide 3503
Air Photo: Monto R1/5023
Location : 6 miles N.W. of 'Rannes' Homestead.

Macro:- A massive, fine-grained, dark grey clastic rock.

Micro:-

Texture:- Clastic; the clasts (about 85% of rock) are subrounded to subangular, of moderate sphericity, 0.02 to 0.4 mm. (dominantly about 0.1 mm.). The cement is microcrystalline.

Clasts:- Feldspar: >15% of rock; altered.

Quartz: <10% of rock.

Lithic material: about 60% of rock; dominantly altered volcanics.

Cement:- Chlorite: about 15% of rock; probably formed by recrystallisation. Secondary epidote abundant.

Origin:- Slight recrystallisation of a pyroclastic rock.

Name:- Slightly Recrystallised CRYSTAL-LITHIC TUFF.

Field No : Ba795 GSQ/R 2544 Slide 3427
Air Photo: Monto R1/5023
Location : 5 miles N.N.W. of Rannes.

Macro:- A massive, fine-grained, purplish-grey igneous rock with abundant, irregular, green amygdales.

Micro:-

Texture:- Intergranular to intersertal, 0.02 to 0.5 mm. About 10% irregular amygdales occur at random.

Constituents:- Andesine: about 65% of rock; somewhat altered.

Clinopyroxene: about 10% of rock; fine, granular, slightly altered.

Secondary minerals:- about 15% of rock; filling interstices - chlorite, epidote and opaques.

Amygdales:- Chlorite, epidote and/or calcite: about 10% of rock.

Origin:- Alteration of a volcanic extrusive.

Name:- ALTERED BASALT.

Field No : Ba823 GSQ/R 2549 Slide 3432
Air Photo: Monto R1/5023
Location : 5 miles N.N.W. of Bardia Homestead

Macro:- A massive, fine-grained, grey-green igneous rock with a fine calcareous vein.

Micro:- Essentially similar to Ba 649B except that the feldspars are almost totally replaced by chlorite, epidote and/or sericite.

Name:- ALTERED ANDESITE.

Field No : Ba831 GSQ/R 2608 Slide 3489
Air Photo: Duaringa R8/5024
Location : 13 miles E. of Rio's Homestead.

Macro:- A massive, fine-grained, greenish and grey mottled, foliated rock.

Micro:-

Texture:- Extremely altered consisting of embayed and broken crystals (up to 1 mm.) and crudely aligned microcrystalline fibrous minerals.

Constituents:- Clinopyroxene: about 20% of rock; altered, broken, embayed crystals.

Actinolite: } in unknown proportions.
Chlorite: }

Epidote: <5% finely divided.

Origin:- Shearing of a basic or intermediate volcanic extrusive.

Name:- SHEARED ? BASALT.

Field No : Ba843/1 GSQ/R 2536 Slide 3419
Air Photo: Duaringa R7/5099
Location : 2 miles S. of Grantheigh Siding.

Macro:- A massive, fine-grained, dark grey igneous rock with abundant phenocrysts.

Micro:-

Texture:- Porphyritic; the phenocrysts (about 25% of rock) are 0.3 to 2 mm, subhedral to anhedral, lath-shaped, corroded in part. The groundmass is allotriomorphic-granular (0.005 to 0.02 mm.) with minor lath-shaped subhedra, to 0.03 mm.

Phenocrysts:- Albite-oligoclase: about 25% of rock; slightly altered to calcite and clay minerals.

Groundmass:- Quartz: about 65% of rock; fine anhedra.
Albite: about 5% of rock; subhedra.
Opaques: minor.)
Epidote: minor.) about 5%
Sericite: minor)
Calcite: minor.)

Origin:- Volcanic, extrusive.

Name:- PORPHYRITIC RHYOLITE.

Field No : Ba845 GSQ/R 2517 Slide 3400
Air Photo: Duaringa R7/5099
Location : 8 miles S.S.E. of Grantleigh Siding.

Macro:- A massive, fine-grained, greenish-grey, igneous rock with white feldspar phenocrysts and coarse amygdales.

Micro:-

Texture:- Porphyritic to glomeroporphyritic, amygdaloidal. The phenocrysts (about 20% of rock) are 0.5 to 2 mm. subhedral and anhedral, lath-shaped. The groundmass is essentially intersertal, crudely pilotaxitic, 0.2 to 0.4 mm. The amygdales (about 5%) are irregular, up to 3 mm.

Phenocrysts:- Albite-andesine: about 20% of rock; altered replaced in part by calcite, epidote, chlorite, clay minerals and/or clinozoisite.

Groundmass:- Acid plagioclase: about 45% of rock; altered.

Chlorite: about 10% of rock; filling interstices.

Epidote: about 10% of rock; finely divided, brown.

Calcite: about 5% of rock.

Actinolite: about 5% of rock; acicular.

Clinozoisite: minor.

Apatite: minor.

Amygdales:- Calcite and/or Epidote: about 5% of rock; fine mosaic.

Origin:- Alteration (albitisation) of a basic volcanic extrusive.

Name:- SPILITE.

Field No : Ba845 GSQ/R 2526 Slide 3409
Air Photo: Duaringa R7/5099
Location : 8 miles S.S.W. of Grantleigh Siding

Macro:- A massive, fine-to medium-grained, grey-green crystalline rock.

Micro:-

Texture:- Porphyritic; the phenocrysts (about 5% of rock) are anhedral, 0.5 to 1 mm. The groundmass is intersertal to intergranular, uneven-grained, 0.02 to 0.2 mm.

Phenocrysts:- Oligoclase: about 5% of rock; extremely altered, dominantly to epidote and chlorite.

Groundmass:- The following can be recognised:-

Feldspar - extremely altered.
Epidote - yellow, granular, finely divided, brown.
Clinopyroxene - replaced in part by actinolite.
Actinolite - acicular, secondary.

Chlorite
Clinozoisite

Origin:- Alteration (spilitisation) of a basic volcanic extrusive.

Name:- SPILITE.

Field No : Ba859 GSQ/R 2539 Slide 3422
Air Photo: Baralaba R1/5002
Location : 5 miles E. of Thuriba Homestead

Macro:- A massive, fine-grained, greenish-grey crystalline rock with minor amygdales, dominantly parallel elongate chlorite bodies.

Micro:-

Texture:- Intersertal, 0.2 to 0.6 mm. 5 to 10 minor amygdales, commonly elongate.

Constituents:- Andesine: about 50% of rock; considerably altered to chlorite and epidote.

Clinopyroxene: about 10% of rock; altered in part.

Secondary minerals: about 35% of rock; including chlorite and epidote. These minerals are probably derived in part from the alteration of mafic mineral.

Amygdales:- Chlorite with minor epidote: about 5% of rock; (contrast Ba46 Gogango Range).

Origin:- Volcanic, extrusive. The 'stringing-out' of the amygdales indicates that the rock has been somewhat foliated, presumably by shearing.

Name:- FOLIATED ALTERED ANDESITE.

Field No : Ba859 GSQ/R 2540 Slide 3423
Air Photo: Baralaba R1/5002
Location : 5 miles E. of Thuriba Homestead

Macro:- A massive, fine-grained, purplish-grey rock with about 25% amygdales, 2 to 6 mm.

Micro:-

Texture:- Porphyritic; the phenocrysts (about 5% of rock) are anhedral, lath-shaped, 0.3 to 0.6 mm. The groundmass is intersertal, about 0.08 to 0.15 mm. Amygdales (0.5 to 6 mm.) are distributed at random.

Phenocrysts:- Feldspar: about 5% of rock; totally sericitised.

Groundmass:- Feldspar: about 40% of rock; totally sericitised.

Secondary minerals: about 25% of rock; including:

? Chlorite
Opaques
Sericite

Amygdales:- Calcite and/or Quartz: about 25% of rock.

Origin:- Alteration of a volcanic extrusive,
Name:- ALTERED ? ANDESITE.

Field No : Ba864/1 GSQ/R 2636 Slide 3517
Air Photo: Monto R1/5021
Location : ¾ mile N.W. of Rannes.

Macro:- A massive, foliated, uneven-grained, grey clastic rock with rare clasts to 2 mm.

Micro:- Essentially similar to Ba900 except in the following:-

1. The matrix of Ba864/1 is cryptocrystalline.
2. The clasts are 0.08 to 4 mm., dominantly about 0.75.

Name:- Foliated and slightly Recrystallised LITHIC GREYWACKE

Field No : Ba864/2 GSQ/R 2630 Slide 3511
Air Photo: Monto R1/5021
Location : ¾ mile N.W. of Rannes

Macro:- A very, fine-grained, strongly foliated, purple rock.

Micro:-

Texture:- Schistose, originally clastic; the outlines of the parallel elongated clasts (about 0.1 mm.) can be recognised. The original matrix (about 30%) has been drawn out in long fine stringers about the grains.

Clasts:- Quartz: 5% of rock.

The remainder have been totally sericitised.

Matrix:- Oxidised opaque material: apparently originally argillaceous material, masked by material released during the replacement by sericite.

Origin:- Regional metamorphism of a sediment.

Name:- PHYLLITE.

Field No : Ba864/3 GSQ/R 2619 Slide 3500
Air Photo: Monto R1/5021
Location : ¾ mile N.W. of Rannes

Macro:- A massive, strongly foliated, fine-to medium-grained purplish-grey, clastic rock.

Micro:- Essentially similar to Ba657 except that the clasts are slightly finer and quartz is less abundant.

Name:- Foliated and Recrystallised LITHIC GREYWACKE.

Field No : Ba868 GSQ/R 2524 Slide 3407
Air Photo: Duaringa R7/5098
Location : 2 miles W. of Grantleigh Siding

Macro:- A massive, fine-to medium-grained, grey green crystalline rock.

Micro:- Essentially similar to Ba206 except in the following details:-

1. Actinolite is less abundant in Ba868.
2. Granular epidote (up to 0.05 mm.) is abundant in Ba868.

3. The feldspar (including oligoclase) phenocrysts in Ba868 are not quite as heavily altered.

Name:- SPILITE

Field No. : Ba868 GSQ/R2564 Slide 3447
Air Photo : Duaringa R7/5098
Location : 2 miles W. of Grantleigh Siding.

Macro:- Essentially similar to Ba868A

Micro:- Essentially similar to Ba868A.

Name :- SHEARED LITHIC TUFF

Field No. : Ba868A GSQ/R 2563 Slide 3446
Air Photo : Duaringa R7/5098
Location : 2 miles W. of Grantleigh

Macro:- A massive, foliated, uneven-grained, purplish-grey rock with rare fragments up to 3 cm.

Micro:

Texture:- Clastic; the clasts (about 20% of rock) are anhedral crystals and irregular rock grains from 0.08 mm. The matrix is very fine-grained, flow banded.

Clasts :- Altered feldspar and fine-grained volcanic lithic grains.

Matrix :- Argillaceous with opaques, sericite stringers, chlorite and epidote.

Origin:- Pyroclastic. Minor (only) shearing appears to have taken place.

Name: SHEARED LITHIC TUFF.

Similar rock Ba868.

Field No. : Ba1002 GSQ/R2500, Slide 3383
Air Photo : Monto R1/5022
Location : 2 miles N.W. of Rannes Homestead.

Macro :- A massive , fine- to medium-grained, grey, igneous rock.

Micro :-

Texture:- Sub-ophitic to intersertal, 0.15 to 1 mm. dominantly about 0.5 mm.

Constituents:- Labradorite: about 50% of rock; sericitised in part.

Clinopyroxene: about 25% of rock; slightly altered in part.

Penninite and serpentine: about 25% of rock: filling interstices.

Siderite: about 5% of rock; with minor associated opaques.

Origin: Alteration of a volcanic ? intrusive (high-level).

Name:- ALTERED BASALT.

Similar rocks Ba210, Ba638, Ba654.

Field No. : Ba 1008/1 GSQ/R2534 Slide 3432
Air Photo: Monto R1/5022
Location : 7 miles S.E. of Thuriba Homestead.

Macro: A massive, greenish-grey, crystalline rock with abundant altered phenocrysts (about 1 mm).

Micro:- Essentially similar to Ba 1063 except that phenocrysts are more abundant and the entire rock is more altered.

Name:- SPILITE.

Field No.: Ba 1008/2 GSQ/R2550 Slide 3433
Air Photo: Monto R1/5022
Location : 7 miles S.E. of Thuriba Homestead

Macro:- A massive, fine-grained, greenish-grey, altered rock.

Micro:-

Texture:- Porphyritic; the phenocrysts (about 30% of rock) are anhedral, 0.2 to 1 mm. The groundmass is cryptocrystalline.

Phenocrysts:- Andesine: about 15% of rock; almost totally replaced by secondary chlorite , epidote and sericite . Serpentine: about 15% of rock, pseudomorphous after a prismatic mafic mineral (?olivine and ? pyroxene).

Groundmass:- Chlorite, epidote, etc.

Origin:- Alteration of a volcanic extrusive.

Name:- ALTERED ? BASALT

Similar rocks Ba 10083/ and 1008/4.

Field No. : Ba 1008/3 GSQ/R 2551 Slide 3434
Air Photo : Monto R1/5022
Location : 7 miles S.E. of Thuriba Homestead

Macro:- Essentially similar to Ba 1008/2.

Micro:- Essentially similar to Ba 1008/2

Name:- ALTERED ? BASALT

Field No.: Ba 1008/4 GSQ/R 2552 Slide 3435
Air Photo: Monto R1/5022
Location: 7 miles S.E. of Thuriba Homestead.

Macro:- Essentially similar to Ba 1008/2 except that Ba 1008/4 appears to be slightly fresher.

Micro:- Essentially similar to Ba 1008/2 except that Ba 1008/4 may be very slightly less altered.

Name:- ALTERED ? BASALT

Field No. : Ba1018 GSQ/R 2553 Slide 3436
Air Photo : Monto R1/5022
Location : 4 miles N.W. of Rannes.

Macro:- A massive, foliated, uneven-grained, greenish-grey clastic rock.

Micro:-

Texture:- Clastic; the clasts (about 60% of rock) are of 2 types - (i) about 40%, subrounded to embayed fragments of low to moderate sphericity, 0.6 to 4 mm. (ii) about 20% broken and/or corroded crystals 0.08 to 0.3 mm. The matrix is very fine-grained, flow banded.

Clasts:- Lithic material: about 40% of rock; altered fluidal volcanics (acid to latermediate) and rare quartz-biotite hornfels.

Feldspar: about 20% of rock; crystals considerably altered.

Matrix:- Tuffaceous: about 40% of rock; with chlorite (predominant) and epidote and calcite.

Origin:- Alteration of a pyroclastic rock.

Name:- ALTERED CRYSTAL-LITHIC TUFF.

Field No : Bal024 GSQ/R2561 Slide 3444
Air Photo: Monto R1/5022
Location : 5 miles E. of Thuriba Homestead

Macro:- A massive, fine-grained, blue-grey rock.

Micro:-

Texture:- Clastic; the clasts (about 75% of rock) are 0.08 to 1 mm., broken crystals and irregular lithic grains. The matrix is very fine-grained cloudy.

Clasts:- Crystals: about 40% of rock; feldspar and uralite. Lithic material about 35% of rock; very fine-grained, altered volcanics.

Natrix:- Chloritic: about 25% of rock; very cloudy.

Origin:- Sedimentary; derived from volcanic material.

Name:- TUFFACEOUS GREYWACKE

Field No : Bal026/2 GSQ/R 2570 Slide 3451
Air Photo: Monto R1/5022
Location : 5¼ miles E. of Thuriba Homestead

Macro:- A massive, fine-grained, greenish-grey rock.

Micro:- Apparently similar to Ba699.

Name :- SHEARED VOLCANIC

Field No : Bal036 GSQ/R2532 Slide 3415
Air Photo: Duaringa R7/5099
Location : 1 mile W. of Grantleigh Siding

Macro:- A massive, fine-to medium-grained, purplish-grey, crystalline rock.

Micro:- Essentially similar to Ba607/5 except in that:-

(1) Quartz amygdales are rare in Bal036.

(2) The plagioclase in the groundmass of Balo36 is much less altered.

Name:- SPILITE

Field No : Bal041 GSQ/R2523 Slide 3406
Air Photo; Duaringa R7/5099
Location : 5½ miles S.E. Grantleigh Siding

Macro:- A massive fine-to medium-grained, grey-green, foliated crystalline rock.

Micro:- Essentially similar to Ba216 except in the following:-

1. The groundmass of Bal041 appears to have been finer-grained.
2. Actinolite (with minor associated clinopyroxene) is less abundant in Bal041.
3. Bal041 has been sheared to some extent.

Name:- SHEARED SPILITE

Field No : Bal044 GSQ/R 2607 Slide 3488
Air Photo: Duaringa R7/5099
Location : 8 miles S.S.E. of Grantleigh Siding

Macro:- A massive, fine-grained, light grey rock with about 15% amygdales about 1 mm.

Micro:-

Texture:- Intersertal, cryptocrystalline to 0.2 mm. Amygdules (about 15%) are irregular, about 1 mm. surrounded by a very fine dark translucent rim.

Constituents:- Albite: about 35% of rock; with associated calcite.

Chlorite: about 40% of rock; filling interstices.

Calcite: ⟨10% of rock; secondary⟩

Hydrogrossularite: minor.

Amygdules:- Calcite: about 15% of rock; with outer rim of chlorite.

Origin: Alteration of volcanic extrusive.

Name:- SPILITE

Field No : Bal055 GSQ/R2505 Slide 3388
Air Photo: Duaringa R8/5025
Location : 7 miles W.N.W. of Wowan.

Macro:- A massive, fine-to medium-grained, light grey, igneous rock.

Micro:-

Texture:- Essentially fine-eneven-grained consisting of granular, acicular and lath-shaped crystals, 0.02 to 0.3 mm. About 10% ragged and broken crystals, up to 4 mm. occur also.

Constituents:- Andesine: about 20% of rock; altered crystals, replaced in part.

Sericite: about 5% of rock; secondary after feldspar.

Clinopyroxene: about 10% of rock; coarse crystals, replaced in part by actinolite.

Actinolite: about 10% of rock; acicular, secondary.

Clinozoisite: about 20% of rock; granular.

Chlorite: about 30% of rock; almost isotropic.

Quartz: minor; secondary.

? Leucoxene: minor; secondary.

Origin:- Shearing and alteration of an igneous rock; the original rock was probably somewhat similar to Ba701 and Ba226/2.

Name:- ALTERED SHEARED ANDESITE

Similar rocks Ba224, Ba242, Ba703

Field No : Bal057 GSQ/R2548 Slide 3431
Air Photo: Duaringa R8/5023
Location : 9½ miles S.E. of Rio Homestead

Macro:- A massive, fine-grained, grey-green, igneous rock with abundant fine-irregular calcite veins.

Micro:- Essentially similar to Ba649B

Name:- ALTERED ANDESITE

Field No : Bal062 GSQ/R2555 Slide 3438
Air Photo: Duaringa R9/5074
Location : ½ mile N. of Thuriba Homestead

Macro:- A massive, uneven-grained, purplish-grey clastic rock with clasts up to 2 cm (dominantly <1 mm.).

Micro:-

Texture:- Clastic; the clasts (about 80% of rock) are irregular, dominantly about 0.6 mm. The interstices are filled with crystalline cement.

Clasts:- Lithic material: about 80% of rock; altered fluidal volcanics with minor tuff and devitrified glass. Unidentifiable.

Cement:- Cloudy calcite: about 20% of rock.

Origin:- Sedimentary.

Name:- CALCAREOUS SUBGREYWACKE

Field No : Bal062/1 GSQ/R2529 Slide 3510
Air Photo: Duaringa R9/5074
Location : ½ mile N. of Thuriba Homestead

Macro:- A massive, fine-grained, medium to dark grey; thinly bedded, cleaved clastic rock.

Micro:- Essentially similar to Ba[illegible]/2 except that [illegible]/1 is very heavily ironstained.

Name:- Cleaved and Partially Recrystallised Bedded MUDSTONE to LITHIC GREYWACKE

Field No : Bal063 GSQ/R2533 Slide 3416
Air Photo: Duaringa R9/5072
Location : ½ mile N.W. of Thuriba Homestead

Macro:- A massive, fine-grained, grey-green igneous rock with abundant altered salic phenocrysts up to 2 mm.

Micro:- Essentially similar to Ba607/5 except that siliceous amygdules are rare.

Name:- SPILITE

Similar rock Bal008/1

Field No : Bal063/2 GSQ/R2626 Slide 3507
Air Photo: Duaringa R9/5072
Location : ¾ mile N.W. of Thuriba Homestead

Macro:- A massive, uneven-grained, thinly bedded, foliated, khaki rock.

Micro:-

Texture:- Clastic to lepidoblastic, graded-bedded. The clasts (0 to 85% of rock) are 0.02 to 1 mm. The lepidoblastic mica is aligned normal to the bedding.

Clasts:- Quartz:
Plagioclase:
Lithic material: essentially volcanic.
Quartz: feldspar: lithics = 1:1:15

Matrix:- Mica: recrystallised argillaceous material.

Origin:- Foliation and partial recrystallisation of a bedded sediment.

Name:- Foliated and Partially Recrystallised Bedded MUDSTONE to LITHIC GREYWACKE

Similar rock Bal062/1

Field No : Bal065 GSQ/R2502 Slide 3385
Air Photo: Duaringa R9/5072
Location: 1 mile N.W. of Thuriba Homestead

Macro:- A massive, fine-grained, greenish-grey, igneous rock with rare phenocrysts.

Micro:- Essentially similar to Ba226/2 except in the following:-

1. Bal065 contains no amygdules.
2. Bal065 contains andesine which is more calcic than that in Ba226/2.
3. Bal065 contains rare phenocrysts (to 4 mm.) of pyroxene and of andesine.
4. Bal065 is traversed by a vein comprising fine quartz anhedra and the rock constituents finely divided - probably formed by minor local shearing.
5. The andesine in Bal065 is considerably altered to sericite and/or saussurite.

Name:- ALTERED BASALT

Field No : Bal068 GSQ/R2627 Slide 3508
Air Photo: Duaringa R9/5072
Location : 3½ miles N.N.W. of Thuriba Homestead

Macro:- A massive, fine-grained, purplish-coloured clastic rock.

Micro:- Essentially similar to Ba680A except in the following details:-

1. The clasts in Bal068 are dominantly about 0.04 mm.

2. About 15% opaque mineral, oxidised in part, is distributed at random. Some, at least, of this material appears to be devitrified glass shards.

Name:- Altered and Recrystallised VITRIC-CRYSTAL TUFF.

RANNES BEDS

Field No : Ba35/1 GSQ/R2371 Slide 3227
Air Photo: Monto R2/5030
Locality : Quarry E. of Rannes

Macro:- A very fine-grained, lustrous, purplish schistose rock.

Micro:-

Texture:- The texture is dominated by parallel streaks of very fine micaceous flakes associated with cloudy argillaceous material and granular crystals, 0.01 to 0.06 mm. Rare relic crystals occur.

Constituents:- Chlorite: about 50% of rock; occurring in parallel stringers with associated ?sericite.

Argillacecus material: about 30% of rock; hematite-stained 'rock flour'.

Opacues: about 10% of rock; granular.

Epidote and Clinozoisite: about 5% of rock; granular to spherulitic.

Relic crystals (indeterminate): about 5% of rock; fractured and corroded.

Origin:- Strong shearing of a volcanic rock.

Name:- CHLORITE SCHIST.

Field No : Ba45 GSQ/R2383 Slide 3239
Air Photo: Duaringa R8/5025
Location : Mt Wheal, Gogango Range

Macro:- A sheared, pinkish-grey, clastic limestone with distinct fragments up to 5 mm., dominantly about 1 mm.

Micro:-

Texture:- Clastic, partly recrystallised. The clasts, about 40% of rock, are single calcite crystals believed to be crinoid fragments. The crystals (0.17 to 4 mm) are somewhat irregular and some have undergone partial replacement. The matrix is a finely crystalline(0.01 to 0.02 mm.) mosaic. There is no real evidence of shearing.

Clasts:- Calcite crystals: about 40% of rock; fragmentary organic material.

Matrix:- Calcite (with minor admixed mud): about 60% of rock.

Origin:- Shearing - partial recrystallisation of a fragmentary fossiliferous sediment.

Name:- SHEARED AND RECRYSTALLISED CRINOIDAL CALCARENITE.

Field No : Ba50 GSQ/R2392 Slide 3248
Air Photo: Duaringa R8/5023
Location : 4 miles N. of Thuriba Homestead

Macro:- A massive, medium-grained, greenish-grey clastic rock.

Micro:-

Texture:- Clastic; the clasts (about 95% of rock) are dominantly rounded, of moderate to low sphericity, 2 to 6 mm.; The clasts are set in about 5% chlorite cement.

Clasts:- Lithic material: about 95% of rock; altered basic igneous rocks and crystal tuffs.

Cement:- Chlorite with minor admixed cloudy material. About 5% of rock.

Origin:- Sedimentary; derived from volcanic terrain.

Name:- SUBGREYWACKE

Field No : Bal36 GSQ/R2554 Slide 3437
Air Photo: Duaringa R9/5075
Location : 5 miles E. of Thuriba Homestead

Macro:- A massive, uneven-grained, greenish-grey clastic rock.

Micro:- Essentially similar to Bal018 except in the following:-

1. Lithic clasts in Bal36 are slightly coarser.
2. Crystal clasts are rare in Bal36.
3. About 5% crystalline calcite occurs in the matrix of Bal36.

Name:- ALTERED LITHIC TUFF

Field No : Ba206 GSQ/R2611 Slide 3492
Air Photo: Monto R1/5021
Location : 5 miles N of Rannes

Macro:- A massive, very fine-grained, pink rock traversed by a ne work of very fine veins.

Micro:-

Texture:- Cryptocrystalline.

Constituents:- Chert: predominant.
Mica: minor.

Veins:- Quartz

Origin:- The chert may be primary or secondary. The mica represents recrystallisation of admixed argillaceous material.

Name:- Impure CHERT.

Field No : Ba643A GSQ/R2565 Slide 3448
Air Photo: Baralaba R2/5096
Location : 2 miles W. of Rannes.

Macro:- A massive, uneven-grained, greenish-to purplish-grey, clastic rock with clasts up to 2 cm.

Micro:- Extremely altered apparently somewhat similar to Ba780.

Name:- CALCAREOUS SUBGREYWACKE

Field No : Ba657 GSQ/R2615 Slide 3496
Air Photo: Baralaba R1/5002
Location : 8 miles N. of Rannes

Macro:- A massive, pinkish-grey, foliated rock containing some 20% crystals to 1 mm.

Micro:-

Texture:- Originally clastic; the clasts (about 20% of rock) are dominantly embayed, broken and partly recrystallised crystals, dominantly about 0.6 mm. Rare elongate lithic fragments are present. The matrix/cement is cryptocrystalline, hornfelsic to lepidoblastic. Numerous veins traverse the rock.

Clasts:- Quartz: $\backslash$10% of rock; cloudy, partly recrystallised.
Acid feldspar: $<$10% of rock; altered.
Lithic material: minor; altered volcanic.

Matrix/Cement:- Quartz: 70-75% of rock.
Mica: 5-10% of rock; aligned flakes.

Origin:- Regional metamorphism of a volcanic derived clastic rock.

Name:- Foliated Recrystallised ? ARKOSE

Similar rock Ba833/2.

Field No.: Ba660 GSQ/R2609 Slide 3490
Air Photo: Duaringa R9/5075
Location : 8 miles W.S.W. of Wowan

Macro:- A foliated, very fine-grained, light grey rock with elongate, flattened, aligned pebbles up to 4 cm.

Micro:-

Texture:- Two rock types are visible representing host rock and included pebbles, The host rock is recrystallised consisting of aligned elongate anhedra (dominantly about 0.05 - 0.8 mm.). The pebbles are of porphyritic material.

Constituents:- Calcite: predominant.
Pebbles: about 30% of rock; porphyritic ? trachyte, considerably calcitised.

Origin:- Shearing and minor recrystallisation of a sediment.

Name:- Sheared and Recrystallised PEBBLY LIMESTONE.

Field No : Ba684 GSQ/R2604 Slide 3485
Air Photo: Duaringa R8/5025
Location : 5½ miles S.W. of Wowan

Macro:- A massive, fine-grained, thinly-bedded, light grey rock cut by several irregular quartz veins.

Micro:-

Texture:- Bedding is distinct with an alternation of 1 mm. and 0.3 mm. beds.

The thin beds are lepidoblastic with rare relic clasts.

Thick bed:- Essentially similar to Ba854.

Thin beds:- Essentially similar to Ba783.

Origin:- Minor recrystallisation and foliation of a sediment.

Name:- Slightly Recrystallised SUBGREYWACKE and MICA SCHIST.

Field No: Ba691 GSQ/R2634 Slide 3515
Air Photo: Duaringa R8/5025
Location : 8½ miles W. of Wowan

Macro:- A massive, foliated, brown, very coarse-grained, clastic rock.

Micro:- Essentially similar to Ba737/4 except in that Ba691 is traversed by a network of fine, broken and distorted siliceous veins.

Name:- Silicified and Partly Recrystallised VOLCANIC CONGLOMERATE.

Field No: Ba731 GSQ/R2571 Slide 3452
Air Photo: Duaringa R6/5046
Location : 8 miles N.W. of Grantleigh Siding

Macro:- A simply folded, grey, clastic rock consisting of two beds, fine and very fine-grained.

Micro:-

Texture:- The two beds are quite distinct. The 'coarse bed' is clastic; the clasts (about 90% of rock) are commonly subrounded to embayed, of moderate sphericity, 0.01 to 0.2 mm. (dominantly about 0.07 mm. The groundmass, originally very fine-grained, detrital, has recrystallised as very finely crystalline stringers about the grains. The 'fine bed' is lepidoblastic with about 5% relic grains, about 0.01mm.

'Coarse bed'

Clasts:- Quartz: about 25% of rock; strained.

Acid plagioclase: < 5% of rock; fresh.

Muscovite: < 5% of rock; cloudy in part.

Lithic material: about 60% of rock; argillaceous unidentifiable (50%) and granitic and quartzitic material (10%).

Matrix:- Mica: about 10% of rock; finely-divided.

'Fine bed'

Constituents:- Sericite: about 95% of rock; aligned flakes.

Quartz: about 5%; relic grains.

Origin:- The 'fine bed' was formed by the almost complete recrystallisation of a incompetent, very fine-grained argillaceous sediment at the crest of a fold. At the same time the more stable 'coarse bed', which appears to have been derived from a dominantly granitic terrain, has undergone only slight recrystallisation (of the matrix).

Name:- Slightly Recrystallised SUBGREYWACKE and SERICITE SCHIST.

Field No : Ba780 GSQ/R2562 Slide 3445
Air Photo: Monto R1/5023
Location : 3 miles N.W. of Bardia Homestead

Macro:- A massive, uneven-grained, purplish-grey clastic rock with clasts up to 5 cm.

Micro:- Essentially similar to Ba1062 except that Ba780 is coarser-grained and the clasts are noticeably rich in clinozoisite.

Name:- CALCAREOUS SUBGREYWACKE

Similar rock Ba643A.

Field No : Ba788 GSQ/R2637 Slide 3518
Air Photo: Monto R1/5023
Location : 6 miles N.W. Rannes Homestead

Macro:- A massive, slightly foliated, coarse - to very coarse - grained reddish-to greenish-grey clastic rock with pebbles up to 1.5 cm.

Micro:- Essentially similar to Ba900 except that many of the clasts are heavily ironstained. Rare fragments of ? spilite are present.

Name:- Foliated and Slightly Recrystallised VOLCANIC CONGLOMERATE.

Field No : Ba828/1 GSQ/R2633 Slide 3514
Air Photo: Duaringa R8/5023
Location : 11 miles E. of Rio Homestead

Macro:- A massive, very coarse-grained, greenish-grey, clastic foliated rock with clasts up to 2 cm, dominantly 1-2 mm.

Micro:- Essentially similar to Ba900 except in the following:-

1. The finer grain size of Ba828/1 (see macro).
2. Epidote is less abundant and calcite present in the 'matrix' which is cryptocrystalline.
3. Rare fragments of subgreywacke and mica phyllite are present.

Name:- Foliated Slightly Recrystallised VOLCANIC CONGLOMERATE.

Field No : Ba833 GSQ/R2617 Slide 3498
Air Photo: Duaringa R8/5024
Location : 12 miles E. of Rio Homestead

Macro:- A massive, strongly foliated, greenish-grey clastic rock with clasts up to 1 mm.

Micro:- Essentially similar to Ba657 except in the following details:-

1. Clasts make up about 55% of Ba833.
2. The clasts in Ba833 include:-

   Quartz: $>10\%$

   Feldspar: $<10\%$ sericitised

   Lithic material: about 35% including chert, quartzite, mica schist, silicified mudstone, etc.

3. The matrix/cement in Ba833 is dominantly lepidoblastic mica.

Name:- Foliated Recrystallised LITHIC GREYWACKE

Similar rock Ba862.

Field No : Ba833/2 GSQ/R2616 Slide 3497
Air Photo: Duaringa R8/5024
Location :12 miles E. of Rio Homestead

Macro:- A massive, greenish-grey, foliated rock with abundant rock fragments and crystals up to 1 cm (dominantly about 1 mm.).

Micro:- Essentially similar to Ba657 except that lithic fragments (dominantly sheared quartzite) are much more abundant.

Name:- Foliated Recrystallised GREYWACKE

Similar rock Ba862.

Field No : Ba833/2 GSQ/R2616 Slide 3497
Air Photo: Duaringa R8/5024
Location : 12 miles E. of Rio Homestead

Macro:- A massive, greenish-grey, foliated rock with abundant rock fragments and crystals up to 1 cm (dominantly about 1 mm.).

Micro:- Essentially similar to Ba657 except that lithic fragments (dominantly sheared quartzite) are much more abundant.

Name:- Foliated Recrystallised ? SUBGREYWACKE.

Field No : Ba862 GSQ/R2618 Slide 3499
Air Photo: Monto R1/5021
Location : 1½ miles S.W. of Muruguran Siding.

Macro:- A strongly foliated, grey-brown clastic rock with clasts up to 1.5 cm.

Micro:- Essentially similar to Ba833.

Name:- Foliated Recrystallised LITHIC GREYWACKE

Field No : Ba871 GSQ/R2573 Slide 3454
Air Photo: Duaringa R7/5097
Location : 2 miles W. of Grantleigh

Macro:- A massive, fine-grained, thinly bedded grey clastic rock with a distinct foliation inclined at about 45° to the bedding.

Micro:- Essentially similar to Ba728 except that in Ba871 there is evidence of 'stringing out' in parallel lines of the stringers of recrystallised matrix. The angle between these and the bedding is measured as 38°.

Name:- Slightly Recrystallised FOLIATED SUBGREYWACKE.

Field No : Ba874 GSQ/R2575 Slide 3456
Air Photo: Duaringa R7/5097
Location : 4 miles W. of Grantleigh Siding

Macro:- A massive, fine-grained, light grey, thinly-bedded, micaceous clastic rock.

Micro:- Essentially similar to the 'coarse bed' Ba731 except that in Ba874 there is a slight tendency towards parallelism of the mica (recrystallised matrix) flakes and minor pressure welding of some grains has taken place.

Name:- Slightly Recrystallised SUBGREYWACKE.

Field No : Ba879 GSQ/R2592 Slide 3473
Air Photo: Duaringa R7/5097
Location : 4½ miles W. of Grantleigh Siding

Macro:- A massive, fine-grained, buff-coloured clastic rock.

Micro:- Essentially similar to Ba854 except that the recrystallised matrix is somewhat ironstained in part.

Name:- Slightly Recrystallised SUBGREYWACKE.

Field No : Ba884 GSQ/R2624 Slide 3505
Air Photo: Duaringa R7/5097
Location : 5½ miles W. of Grantleigh Siding

Macro:- A massive, fine-grained, khaki clastic rock.

Micro:- Essentially similar to Ba850/3

Name:- Slightly Recrystallised SUBGREYWACKE.

Field No : Ba900 GSQ/R2632 Slide 3513
Air Photo: Duaringa R8/5024
Location : 11 miles E. of Rio Homestead

Macro:- A massive dark grey to greenish-grey, very coarse-grained clastic rock with a marked foliation.

Micro:- Essentially similar to Ba737/4 except in the following details:-

1. The fine clastic fraction appears to be absent from Ba900.
2. The recrystallised matrix of Ba900 contains abundant epidote.
3. The pebbles are somewhat elongated and aligned with their long axes parallel.
4. The matrix is drawn out in crudely parallel stringers.

Name:- FOLIATED Slightly Recrystallised VOLCANIC CONGLOMERATE

Similar Rock Ba788

Field No : Ba900A GSQ/R2628 Slide 3509
Air Photo: Duaringa R8/5024
Location : 11 miles E. of Rio Homestead

Macro:- A massive, fine-grained, greenish-grey clastic rock.

Micro:-

Texture:- Extremely altered, clastic; the clasts (about 80% of rock) are 0.1 to 1 mm. (dominantly about 0.5 mm), rounded to subangular, of moderate sphericity. The 'matrix' is very fine-grained, recrystallised in part.

Clasts:- Feldspar: about 20% of rock; chloritised and/or calcitised.

Lithic material: about 60% of rock; dominantly volcanic with minor chert and quartzite.

'Matrix':- About 20% of rock; represented by secondary calcite and chert, mica (dominantly chlorite), finely divided epidote and minor primary argillaceous material.

Origin:- Minor recrystallisation of a sediment.

Name:- Slightly Recrystallised LITHIC GREYWACKE

Field No : Ba907 GSQ/R2583 Slide 3464
Air Photo: Duaringa R8/5022
Location : 6½ miles E.S.E. of Rio Homestead

Macro:- A massive, fine-grained light grey bedded clastic rock.

Micro:- Essentially similar to Ba854.

Name:- Slightly Recrystallised SUBGREYWACKE

Field No : Ba910 GSQ/R2597 Slide 3478
Air Photo: Duaringa R7/5098
Location : 6 miles S. of Grantleigh Siding

Macro:- A massive, fine-grained, light brown clastic rock traversed by numerous fine quartz veins.

Micro:- Essentially similar to Ba854 except that the matrix makes up about 10% of rock and is heavily limonite-stained.

Name:- Silicified Slightly Recrystallised SUBGREYWACKE.

Field No : Ba1079 GSQ/R2635 Slide 3526
Air Photo: Monto R1/5023
Location : 2½ miles S.E. of Thuriba Homestead

Macro:- A massive, medium to very coarse-grained, grey clastic rock.

Micro:- Essentially similar to Ba890 except in that many of the clasts are considerably calcitised and the matrix is slightly calcitised.

Name:- Altered Slightly Recrystallised QUARTZ-LITHIC CONGLOMERATE.

ROOKWOOD VOLCANICS

Field No : Ba37 GSQ/R2373 Slide 3229
Air Photo: Monto R1/5022
Location : Gogango Range, west of Muruguran Siding

Macro:- A massive, fine-grained, medium grey rock traversed by fine quartz veins.

Micro:- Essentially similar to Ba40/1 except in the following details:-

1. Ba37 is not amygdaloidal.
2. Ba37 is traversed by fine quartz veins.
3. Ba37 is slightly sheared.

Name:- SHEARED AND SILICIFIED SPILITE.

Field No : Ba206 GSQ/R2522 Slide 3405
Air Photo: Monto R1/5021
Location : 5 miles N. of Rannes

Macro:- A massive, very fine-grained, medium grey igneous rock with about 5% altered, anhedral, phenocrysts, 1 to 2 mm.

Micro:-

Texture:- Porphyritic; the phenocrysts (about 5% of rock) are extremely altered, originally anhedral. The groundmass is intersertal, consisting of secondary minerals. Rare very fine veins traverse the rock.

Phenocrysts:- Feldspar: about 5% of rock; cf.

Groundmass:- Acicular, interstitial (fibrous) and granular crystals of the following secondary minerals:-

Actinolite (with minor associated primary clinopyroxene)
Chlorite
Epidote (2 varieties)
Carbonate
Quartz

Veins:- Quartz-epidote

Origin:- Alteration (spilitisation) of a basic volcanic extrusive.

Name:- SPILITE.

Field No : Ba209A GSQ/R2521 Slide 3404
Air Photo: Monto R1/5021
Location : ¾ mile W. of Muruguran Siding

Macro:- A massive, fine-grained, greenish-grey, fluidal rock.

Micro:- Essentially similar to Ba862/1 except in the following details:-

1. The grain size of Ba209A is considerably finer.
2. Very little unaltered pyroxene remains in

Name:- SPILITE.

Field No : Ba210A GSQ/R2559 Slide 3442
Air Photo: Monto R1/5021
Location : 1½ miles W. of Muruguran Siding

Macro:- A massive, fine-grained, grey-green, foliated rock.

Micro:-

Texture:- A fragmental rock consisting of some 35% irregular lithic fragments upwards of 0.5 mm. in finely (about 0.01 to 0.03 mm.) crystalline interstitial material.

Fragments:- Spilite.

Intersitial:- Epidote with minor chlorite.

Origin:- The rock appears to be a pillow lava comprising a number of small pillows in interpillow epidote.

Name:- ? PILLOW LAVA (SPILITE)

Field No : Ba211 GSQ/R2527 Slide 3410
Air Photo: Monto R1/5021
Location : ¾ mile N.W. Muruguran Siding

Macro:- A massive, very fine-grained, light grey, thinly-layered rock.

Micro:- Essentially similar to Ba862/1 except that Ba211 is much finer-grained.

The layering is not really noticeable in thin section but appears to represent a flow-banding.

Name:- SPILITE.

Field No : Ba216 GSQ/R2518 Slide 3401
Air Photo: Monto R1/5021
Location : 1½ miles N.N.W. of Muruguran Siding

Macro:- A massive, fine-grained, grey igneous rock with about 30% subhedral and anhedral, lath-shaped, greenish phenocrysts, 1 to 9 mm.

Micro:-

Texture:- Porphyritic; the phenocrysts (about 30% of rock) are coarse, difficult to distinguish from the host rock due to alteration. The groundmass comprises about 15% (of rock) crudely parallel acicular crystals, o.3 to 0.5 mm. long, in divided cloudy secondary minerals.

Phenocrysts:- Feldspar: about 30% of rock; almost totally replaced by the following secondary minerals:-

Epidote (2 varieties)
Chlorite
Calcite
Opaque dust
Quartz

Groundmass:- Albite-labradorite: about 15% of rock; altered in part, acicular.

Secondary minerals: about 55% of rock; in estimated decreasing order of a bundance:-

Epidote (2 varieties)
Actinolite
Chlorite
Calcite

Origin:- Alteration (albitisation) of basic volcanic extrusive.

Name:- SPILITE

Similar rock Ba216/1

Field No : Ba216/1 GSQ/R2519 Slide 3402
Air Photo: Monto R1/5021
Location : 1½ miles N.N.W. of Muruguran Siding

Macro:- Apparently similar to Ba216 except that there are only about 5% phenocrysts and rare calcite amygdales occur.

Micro:- Essentially similar to Ba216 except that:-

1. Phenocrysts are rare in Ba216/1.
2. The acicular crystals in the groundmass of Ba216/1 are finer.

Name:- SPILITE.

Field No : Ba862/1 GSQ/R2520 Slide 3403
Air Photo: Monto R1/5021
Location : 4½ miles N. of Rannes

Macro:- A massive, fine-grained, grey-green igneous rock.

Micro:-

Texture:- Crudely pilotaxitic to intersertal; acicular crystals to o.5 mm. in length, anhedral granular crystals up to 0.2 mm. and interstitial secondary minerals.

Constituents:- Oligoclase: about 45% of rock; extremely altered, acicular.

Clinopyroxene: about 15% of rock; anhedral, granular; replaced in part by actinolite.

Actinolite: about 15% of rock; acicular, secondary.

Chlorite: about 20% of rock; filling interstices.

Epidote and calcite: about 5% of rock; secondary, finely divided.

Origin:- Alteration (albitisation) of a basic volcanic extrusive.

Name:- SPILITE

Similar rock Ba209A.

UNDIFFRENTIATED BACK CREEK GROUP

Field No : Ba721 GSQ/R2588 Slide 3469
Air Photo: Duaringa R6/5046
Location : 6 miles N.N.E. of Edungalba Siding

Macro:- A massive, fine-grained, grey clastic rock.

Micro:- Essentially similar to Ba854 except that about 5% calcite 'clasts' are present. These are obviously secondary and appear to be pseudomorphous after feldspar and rock fragments.

Name:- Altered Slightly Recrystallised SUBGREYWACKE.

Field No : Ba724A GSQ/R2641 Slide 3522
Air Photo: Duaringa R6/5047
Location : 3 miles S.E. of Separation Homestead

Macro:- A massive, grey, coarse, uneven-grained clastic rock with rounded pebbles up to 3 cm. There is a tendency towards flattening and alignment of the smaller pebbles.

Micro:- Essentially similar to Ba890 except that in Ba724A the alignment of the mica stringers is much stronger.

Name:- Foliated Slightly Recrystallised QUARTZ-LITHIC CONGLOMERATE.

Field No : Ba728 GSQ/R2572 Slide 3453
Air Photo: Duaringa R6/5046
Location : 4 miles N.E. of Edungalba Siding

Macro:- A massive, fine-grained, light grey, thinly bedded micaceous clastic rock.

Micro:- Essentially similar to the 'coarse Bed' of Ba731 except in the following details:-

1. Ba728 contains about 35% quartz and 50% lithic material.
2. Individual beds in Ba728 are distinguished by slight variations in the percentage of mica (recrystallised matrix).

Name:- Slightly Recrystallised SUBGREYWACKE.

Field No : Ba898 GSQ/R 2576 Slide 3457
Air Photo: Duaringa R8/5022
Location : 3½ miles N.E. of Rio Homestead

Macro:- A massive, fine-grained, light brown clastic rock.

Micro:- Essentially similar to the 'coarse bed' of Ba731 except in the following details:-

1. The clasts in Ba898 are 0.04 to 0.2 mm., dominantly about 0.09 mm.
2. The recrystallised matrix is somewhat cloudy and extremely limonite-stained.

Name:- Slightly Recrystallised SUBGREYWACKE.
Similar rock Ba841.

Field No : Ba737/4 GSQ/R2631 Slide 3512
Air Photo: Duaringa R8/5022
Location : 5 miles N.E. of Rio Homestead

Macro:- A massive, brown, weathered clastic rock consisting predominantly of pebbles up to 2 cm.

Micro:-

Texture:- Clastic; the clasts (about 90% of rock) are sub-rounded, of moderate sphericity, about 0.2 mm. (about 5%) and rounded, of moderate sphericity, 2 mm. to 1 cm. The matrix, originally fine-grained, detrital is recrystallised but with no marked orientation.

Clasts:- Acid feldspar: about 5% of rock; fine.

Quartz: minor; fine.

Lithic material: about 85% of rock; essentially acid to intermediate volcanics.

'Matrix':- Mica: about 10% of rock; heavily ironstained.

Origin:- Partial recrystallisation of a volcanic derived sediment.

Name:- Slightly Recrystallised VOLCANIC CONGLOMERATE.

Similar rock Ba691.

Field No : Ba840 GSQ/R2595 Slide 3476
Air Photo: Duaringa R6/5045
Location : 1½ miles S.W. of Riverslea Homestead

Macro:- A massive, fine-grained, grey clastic rock.

Micro:- Essentially similar to Ba854.

Name:- Slightly Recrystallised SUBGREYWACKE.

Field No : Ba841 GSQ/R 2577 Slide 3458
Air Photo: Duaringa R6/5045
Location : 3 miles S. of Riverslea Homestead

Macro:- A massive, fine-grained, buff-coloured clastic rock.

Micro:- Essentially similar to Ba898.

Name:- Slightly Recrystallised SUBGREYWACKE.

Field No : Ba850/1 GSQ/R2580 Slide 3461
Air Photo: Duaringa R7/5099
Location : 4 miles S.E. of Grantleigh Siding

Macro:- A massive, fine-grained, grey clastic rock with a vague foliation.

Micro:- Essentially similar to Ba850/3 except that in Ba850/1 the parallelism of the mica is more strongly developed.

Name:- Slightly Recrystallised and Foliated SUBGREYWACKE.

Field No : Ba850/3 GSQ/R2579 Slide 3460
Air Photo: Duaringa R7/5099
Location : 4 miles S.E. of Grantleigh Siding

Macro:- A massive, fine-grained, grey clastic rock.

Micro:- Essentially similar to Ba854 except that in Ba850/3 there is a vague parallelism of the micaceous stringers presumably initiated by stress.

Name:- Slightly Recrystallised SUBGREYWACKE.

Similar rocks: Ba850/1, Ba888, Ba889/2, Ba913.

Field No : Ba852 GSQ/R2587 Slide 3468
Air Photo: Duaringa R6/5047
Location : 6 miles S. of Rivers[illegible] Homestead

Macro:- A massive, fine-grained, light grey clastic rock.

Micro:- Essentially similar to Ba854 except that the lithic fragments are predominantly micaceous metamorphics.

Name:- Slightly Recrystallised SUBGREYWACKE.

Field No : Ba854 GSQ/R2578 Slide 3459
Air Photo: Duaringa R6/5047
Location : E. of Separation Homestead, N. of the Fitzroy River.

Macro:- A massive, fine-grained, grey clastic rock.

Micro:-

Texture:- Clastic; the clasts (about 95% of rock) are commonly embayed, of moderate sphericity, 0.08 to 0.5 mm. (dominantly about 0.3 mm.). The percentage of grain boundary contacts is very high. About 5% stringers of recrystallised detrital matrix envelop some of the grains.

Clasts:- Quartz: about 15% of rock; strained.

Acid feldspar: about 5% of rock; altered.

Lithic material: about 75% of rock; including -

Quartzite and granitic material (about 10%)

Very fine-grained unidentifiable argillaceous material (dominant).

Very fine-grained volcanics.

Low grade metamorphics.

Zircon: minor

Epidote: minor

Matrix:- Micaceous: about 5% of rock.

Origin:- Sedimentary. The micaceous matrix appears to represent recrystallised argillaceous material. This may have been by diagenesis or by regional changes.

Name:- Slightly Recrystallised SUBGREYWACKE.

Similar Rocks: Ba840, Ba852, Ba879, Ba881, Ba895, Ba909, Ba910.

Field No : Ba881 GSQ/R2581 Slide 3462
Air Photo: Duargina R7/5097
Location : 4 miles W. of Grantleigh Siding

Macro:- A massive, fine-grained, buff-coloured clastic rock with a vague bedding visible.

Micro:- Essentially similar to Ba854. The bedding cannot be distinguished microscopically.

Name:- Slightly Recrystallised SUBGREYWACKE.

Field No : Ba887 GSQ/R2600 Slide 3481
Air Photo: Duaringa R7/5097
Location : 1 mile W. of Herbert Creek in Highway cutting

Macro:- A massive, fine - to medium-grained, grey clastic rock.

Micro:- Essentially similar to Ba889/1 except that the clasts in are 0.08 to 0.5 mm., dominantly about 0.2 to 0.3 mm.

Name:- Slightly Recrystallised LITHIC GREYWACKE.

Field No : Ba888 GSQ/R2582 Slide 3463
Air Photo: Duaringa R7/5097
Location : Highway cutting 1 mile W. of Herbert Creek

Macro:- A massive, fine-grained, grey clastic rock.

Micro:- Essentially similar to Ba850/3.

Name:- Slightly Recrystallised SUBGREYWACKE.

Field No : Ba889 GSQ/R2642 Slide 3523
Air Photo: Duaringa R7/5097
Location : Highway cutting 1 mile W. of Herbert Creek

Macro:- A massive, foliated, coarse, uneven-grained clastic rock. Pebbles make up about 15% of rock only.

Micro:- Essentially similar to Ba724A except in the following details:-

1. The coarse fraction makes up only about 15% of Ba889.
2. Recrystallised matrix makes up about 25% of rock.
3. Minor fine feldspar clasts are present; quartz is relatively less abundant (about 20%) and fine lithics more abundant.

Name:- Foliated slightly Recrystallised PEBBLY LITHIC GREYWACKE.

Similar rocks Ba889/3.

Field No : Ba889/1 GSQ/R2599 Slide 3480
Air Photo: Duaringa R7/5097
Location : Highway cutting 1 mile west of Herbert Creek

Macro:- A massive, coarse-grained, pinkish-grey clastic rock with a vague foliation.

Micro:-

Texture:- Clastic; the clasts (about 85% of rock) are rounded to angular, of high to low sphericity, 0.3 to 2 mm., (dominantly about 1 mm.). The matrix is very fine-grained, argillaceous, partially recrystallised. The foliation is not obvious.

Clasts:- Quartz: about 5% of rock.

Feldspar: about 5% of rock; including subhedral crystals.

Lithic material: about 75% of rock; the following

Quartzite and chert

Miscellaneous volcanics (dominantly acidic).

Subgreywacke

Mica and chlorite metamorphics

Limestone

Matrix:- Argillaceous: about 15% of rock; recrystallised in part to mica.

Origin:- Sedimentary; the rock has undergone minor foliation and recrystallisation.

Name:- Slightly Recrystallised and Foliated LITHIC GREYWACKE.

Similar rock Ba887

Field No : Ba889/2 GSQ/R2596 Slide 3477
Air Photo: Duaringa R7/5097
Location : Highway cutting 1 mile west of Herbert Creek

Macro:- A massive, fine-grained, buff-coloured clastic rock with a vague foliation.

Micro:- Essentially similar to Ba850/1.

Name:- Slightly Recrystallised and Foliated SUBGREYWACKE

Field No : Ba889/3 GSQ/R2598 Slide 3479
Air Photo: Duaringa R7/5097
Location : Highway cutting 1 mile West of Herbert Creek

Macro:- A massive, fine - to medium-grained, greenish-grey, bedded clastic rock.

Micro:- Essentially similar to Ba899.

Name:- Altered and slightly Recrystallised SUBGREYWACKE.

Field No : Ba890 GSQ/R2640 Slide 3521
Air Photo: Duaringa R7/5097
Location : ¾ mile E. of Edungalba Siding

Macro:- A massive, light brown to grey, coarse-uneven-grained, clastic rock with pebbles up to 1 cm.

Micro:-

Texture:- Essentially clastic, bimodal; the clasts (about 90% of rock) are rounded, of low to moderate sphericity, 1 to 8 mm. (dominantly about 2 mm.) and subrounded to subangular (somewhat embayed), of moderate sphericity, 0.04 to 0.5 mm. (dominantly about 0.2 mm.). The matrix is recrystallised, microcrystalline, as fine stringers (with a very crude parallelism) about the grains.

Clasts:- Quartz: about 25% of rock; fine clasts.

Lithic material: about 65% of rock (15% fine, 50% coarse), the following, in decreasing order of abundance can be recognised:-

Slightly Recrystallised Subgreywacke
Quartzite, chert, etc.
Volcanics (minor)

Matrix:- Mica: about 10% of rock; ironstained, recrystallised argillaceous material.

Origin:- Minor recrystallisation of a sediment.

Name:- Slightly Recrystallised QUARTZ-LITHIC CONGLOMERATE.

Similar rocks: Bal079, Ba724A.

Field No : Ba892 GSQ/R2590 Slide 3471
Air Photo: Duaringa R8/5022
Location : 4½ miles E. of Rio Homestead

Macro:- A massive, fine-grained, pinkish-grey clastic rock.

Micro:- Essentially similar to Ba854 except in the following details:-

1. The clasts in Ba892 are 0.08 to 2 mm., dominantly about 0.25 mm.

2. About 10% secondary carbonate (? siderite) occurs in grains about 0.08 to 0.01 mm. partially replacing clasts and matrix at random. It is believed to owe its origin to secondary groundwater deposition.

Name:- Altered and Slightly Recrystallised SUBGREYWACKE.

Similar rock Ba901.

Field No : Ba895 GSQ/R2585 Slide 3466
Air Photo: Duaringa R8/5022
Location : Tank 5 miles S.E. of Rio Homestead

Macro:- A massive, fine-grained, light brown clastic rock.

Micro:- Essentially similar to Ba854.

Name:- Slightly Recrystallised SUBGREYWACKE.

Field No : Ba899 GSQ/R2593 Slide 3474
Air Photo: Duaringa R8/5022
Location : 6½ miles E. of Rio Homestead

Macro:- A massive, fine - to medium-grained, grey to brownish clastic rock.

Micro:-

Texture:- Clastic; the clasts (about 90% of rock) are rounded to angular (corroded in part), of low to moderate sphericity, 0.08 to 0.75 mm. (dominantly about 0.4 mm.). The matrix is very fine-grained, micaceous occurring as fine stringers about grains. About 5% secondary carbonate is distributed at random cf. Ba892.

Clasts:- Quartz: about 10% of rock.

Feldspar: about 5% of rock.

Lithic material: about 75% of rock; the following can be recognised:-

Quartzite and chert

Fine-grained volcanics

Micaceous metamorphics

Granitic material

Matrix:- Mica: about 5% of rock; formed by the recrystallisation of argillaceous detrital matrix.

Carbonate:- ? Siderite: about 5% of rock; secondary.

Origin:- Sedimentary.

Name:- Altered and Slightly Recrystallised SUBGREYWACKE.

Note:- The rock is essentially similar to Ba892 except that the lithic grains are coarse enough to be identified in part.

Field No : Ba901 GSQ/R2591 Slide 3472
Air Photo: Duaringa R8/5022
Location : 9 miles E. of Rio Homestead

Macro:- A massive, fine-grained, grey rock.

Micro:- Essentially similar to Ba892 except that the carbonate is less abundant in Ba901 (about 5%).

Name:- Altered and Slightly Recrystallised SUBGREYWACKE.

Field No : Ba908 GSQ/R2589 Slide 3470
Air Photo: Duaringa R6/5045
Location : 4 miles N.W. Grantleigh Siding

Macro:- A massive, fine-grained, pinkish-grey bedded clastic rock.

Micro:- Essentially similar to Ba850/3 except that about 5% carbonate (? siderite) is present. This mineral is clastic in aspect and is probably pseudomorphous after primary grains.

Name:- Altered Slightly Recrystallised SUBGREYWACKE.

Field No : Ba909 GSQ/R2535 Slide 3467
Air Photo: Duaringa R6/5045
Location : 5 miles N.W. of Grantleigh Siding

Macro:- A massive, fine-grained, dark grey, bedded clastic rock.

Micro:- Essentially similar to Ba854 except that the dominant grain size is about 0.08 mm. The bedding cannot be distinguished microscopically.

Name:- Slightly Recrystallised SUBGREYWACKE.

Field No : Ba910A GSQ/R2643 Slide 3524
Air Photo: Duaringa R7/5098
Location : 6 miles S. of Grantleigh Siding

Macro:- A massive, brownish-grey, coarse - uneven-grained clastic rock with rounded pebbles up to 4 cm.

Micro:- Essentially similar to Ba724A except that clasts are less abundant (about 15% pebbles, 50% fine clasts) and matrix more abundant.

Name:- Slightly Recrystallised PEBBLY LITHIC GREYWACKE.

Field No : Ba911 GSQ/R2574 Slide 3455
Air Photo: Duaringa R7/5098
Location : 6 miles S.S.W. Grantleigh Siding

Macro:- A massive, fine-grained, grey clastic rock.

Micro:- Essentially similar to the 'coarse bed' of Ba731.

Name:- Slightly Recrystallised SUBGREYWACKE.

Field No : Ba912 GSQ/R2594 Slide 3475
Air Photo: Duaringa R7/5098
Location : 6 miles S.S.W. of Grantleigh Siding

Macro:- A massive, fine-grained, buff-coloured, clastic rock.

Micro:- Essentially similar to the 'coarse bed' of Ba731 except that clastic mica is slightly more abundant.

Name:- Slightly Recrystallised SUBGREYWACKE.

Field No : Ba913 GSQ/R2584 Slide 3465
Air Photo: Duaringa R7/5097
Location : Fletcher's Gully, near main road.

Macro:- A massive, fine-grained, grey clastic rock.

Micro:- Essentially similar to Ba350/3.

Name:- Slightly Recrystallised SUBGREYWACKE.

Field No : Ba914 GSQ/R2601 Slide 3482
Air Photo: Duaringa R7/5097
Location : 5 miles W. of Grantleigh Siding

Macro:- A massive, very fine-grained, thinly bedded, light grey clastic rock.

Micro:- Essentially similar to the 'coarse bed' of Ba731 except in the following details:-

1. Detrital muscovite makes up about 5% of Ba914.

2. Micaceous matrix is slightly more abundant (about 15%) and lithic material less abundant in Ba914.

Name:- Slightly Recrystallised LITHIC GREYWACKE.

TERTIARY BASALT

Field No : Ba857 GSQ/R2648 Slide 3529
Air Photo: Duaringa R9/5072
Location : 2 miles S.E. of junction of Don and Dawson Rivers

Macro:- A massive, fine-grained, dark grey igneous rock.

Micro:-

Texture:- Intergranular to intersertal consisting of anhedral acicular crystals 0.5 to 1 mm., anhedral to subhedral prismatic crystals 0.15 to 2 mm. and microcrystalline intersertal material.

Constituents:- Labradorite:- about 60% of rock; fresh acicular crystals.

Olivine:- about 20% of rock; serpentinised in part.

Clinopyroxene:- About 10% of rock; replaced in part by bastite.

Chlorite:- about 15% of rock; filling interstices.

Opaques:- < 5%; anhedral.

Apatite:- < 5% euhedral.

Origin:- Volcanic; probably extrusive.

Name:- OLIVINE BASALT.

Field No : Ba857 GSQ/R2649 Slide 3530
Air Photo: Duaringa R9/5072
Location : 2 miles S.E. of junction of Don and Dawson Rivers

Macro:- A massive, fine-to medium-grained greyish-yellow igneous rock.

Micro:- Essentially similar to above except that the rock is deeply weathered and more altered. The feldspar crystals are fractured and altered along the fractures and the olivine is almost totally replaced.

Name:- Altered OLIVINE BASALT.

INTRUSIONS

Field No : Ba38 GSQ/R2374 Slide 3230
Air Photo: Duaringa R8/5025
Locality : Mt Spencer Gogango Range

Macro:- A massive, fine-grained, grey-green, sheared rock.

Micro:-

Texture:- A sheared rock, apparently originally fairly similar to Ba39/2. There is a tendency towards segregation of mafic and femic minerals in zones parallel to the shear planes. The mafic minerals, at least, were originally fairly coarse crystals.

Constituents:- The original composition appears to have been quite similar to Ba39/2. The mafic crystals have been extremely altered, dominantly uralitised and chloritised. The feldspar is heavily saussuritised.

Origin:- Shearing of an igneous rock. The marked similarity to Ba39/2 indicates an intrusive origin.

Name:- SHEARED DIORITE.

Field No : Ba39/1 GSQ/R2375 Slide 3231
Air Photo: Duaringa R8/5025
Location : Mt Spencer Gogango Range

Macro:- A massive, coarse-grained, grey-green igneous rock.

Micro:-

Texture:- Extremely altered. The original rock was granitic with a grain size of 1 to 5 mm. Alteration has produced a number of very fine (about 0.08) secondary crystals, dominantly acicular, in the interstices of the rock.

Constituents:- Plagioclase (oligoclase-andesine): about 65% of rock; subhedral and anhedral lath-shaped crystals, saussuritised in part and replaced in part by alkali feldspar.

Alkali feldspar: about 5% of rock; pools partially replacing plagioclase crystals.

Mafic minerals: about 20% of rock; uralitised pyroxene and chloritised amphibole with associated secondary epidote.

Secondary minerals: about 10% of rock;

apatite
actinolite
chlorite
epidote
quartz
opaques

Origin:- Hydrothermal alteration of a plutonic rock.

Name:- ALTERED DIORITE.

Field No : Ba39/2 GSQ/R2376 Slide 3232
Air Photo: Duaringa R8/5025
Location : Mt Spencer, Gogango Range

Macro:- A massive, medium-grained, grey-green igneous rock.

Micro:- Essentially similar to Ba39/1 except in the following details:-

1. The grain size of Ba39/2 is about 1-2 mm.
2. Clinopyroxene is much more abundant than amphibole (prismatic tremolite).
3. The mafic crystals are not nearly so badly altered as in Ba39/1.
4. The feldspars in GSQ 3231 are altered almost beyond recognition.

Name:- ALTERED DIORITE

Field No : Ba342/1 GSQ/R2439 Slide 3310
Air Photo: Monto R3/5043
Location : Mt Cooper

Macro:- A massive, dark grey rock containing abundant coarse feldspar crystals up to 5 mm. and rare rock fragments (? xenoliths) up to 2 cm.

Micro:-

Texture:- Porphyritic; the phenocrysts (about 15% of rock) are 1 to 3 mm. subhedral to anhedral. The groundmass is essentially pilotaxitic (about 0.08 mm.) but about 30% of groundmass has been recrystallised as fine (0.005 mm.) granular crystals.

Phenocrysts:- Andesine: about 10% of rock; slightly altered only.

Hornblende: about 5% of rock; partly pseudomorphed by opaques, granular biotite (see groundmass) and chlorite, and, in general, surrounded by a fine zone of concentrated granular biotite.

Groundmass:- Feldspar: about 60% of rock; altered.

Biotite: about 25% of rock; pale yellow-green, granular developed by recrystallisation of the mafic components of the groundmass.

Origin:- Low grade contact-metamorphism of a volcanic extrusive.

Name:- Partly Recrystallised ANDESITE.

Field No : Ba342/2 GSQ/R2438 Slide 3309
Air Photo: Monto R3/5043
Location : Mt Cooper

Macro:- A massive, extremely altered, buff-coloured granitic rock.

Micro:-

Texture:- Allotriomorphic-granular, about 4 mm.

Constituents:- Microperthite: about 90% of rock;
Albite: minor; fresh, lamellar twinned.
Quartz: minor; with abundant minute inclusions.
Epidote: about 5% of rock; pseudomorphous after hornblende.

Origin:- Intrusive, ? plutonic.

Name:- SYENITE.

Field No : Ba345 GSQ/R2431 Slide 3302
Air Photo: Baralaba R2/5095
Location : Mt Cooper

Macro:- A massive, fine-grained, mauve-coloured, flow-banded rock.

Micro:-

Texture:- Essentially pilotaxitic, grain size about 0.2 mm.

Constituents:- Alkali feldspar: about 90% of rock; acicular crystals, altered to clay minerals.
Hematite: about 10% of rock; secondary, dendritic in part.
Epidote: minor, secondary.
Quartz: minor, ? secondary.

Origin:- Hydrothermal alteration of a volcanic extrusive.

Name:- ALTERED TRACHYTE.

ENCLOSURE 1

GEOLOGY OF THE GOGANGO RANGE
QUEENSLAND

PHOTO - SCALE 1:87,000

1 0 1 2 3 4 5 MILES

Reference

CAINOZOIC

- Cz — *Soil, sand, gravel, alluvium*
- Cza — *Alluvium*
- *Laterite*

TERTIARY

- Ta — *Sandstone, siltstone, claystone, conglomerate*
- Tb — *Basalt*

PALAEOZOIC

UPPER PERMIAN

- Upper Bowen Coal Measures / Baralaba Coal Measures — Pul — *Feldspathic sandstone, coal, lithic feldspathic sandstone, siltstone, shale*
- Gyranda Formation — Puy — *Lithic feldspathic sandstone, greywacke, shale. Plant fragments*
- Back Creek Group Undifferenhiated — Pb — *Subgreywacke, shale, conglomerate. Conglomerate*
- Flat Top Formation — Pvl — *Richly fossiliferous calcilutite. Some coquinite*
- Barfield Formation — Pur — *Calcareous silty mudstone with calcareous nodules. Limestone lenses*
- Oxtrack Formation — Puo — *Fossiliferous limestone and grey and light brown calcareous siltstone*

LOWER PERMIAN

- Rookwood Volcanics — Plr — *Spilitic pillow lava, agglomerate*
- Rannes Beds — Plw — *Pale grey-green shale and siltstone, slate, fine to coarse grained tuffaceous sandstone, limestone and conglomerate. Some primary volcanics. Limestone and conglomerate*
- Camboon Andesite — Pln — *Andesite, basalt, agglomerate, crystal tuff, tuff, tuffaceous sandstone. Some siltstone and shale*

SILURIAN - DEVONIAN

- S-D — *Fossiliferous limestone and marble, phyllite, andesitic volcanics*

Intrusions

- *Diorite*
- *Syenite, some volcanics*

- *Geological boundary*
- *Anticline, showing plunge*
- *Minor fold, showing plunge*
- *Fault*

Where location of boundaries, folds and faults is approximate, line is broken; where inferred, queried; where concealed, boundaries and folds are dotted, faults are shown by short dashes

- *Strike and dip of strata*
- *Vertical strata*
- *Horizontal strata*
- *Strike and dip of overturned strata*
- *Dip <15°*
- *Dip 15°-45°* } as photo interpretation
- *Trend lines*
- *Strike and dip of foliation*

- *Macrofossil locality* } Ba 95, Du510 - *locality reference numbers*
- *Plant fossil locality*
- *Fossil wood*
- *Trachyte dyke*
- Ba 239 — *Specimen locality with number*
- *Coal mine*
- B.M.R.17 — *B.M.R. shallow drill hole*
- *Water bore*
- *Dry bore*
- *Well*
- *Tank*
- *Dam*
- *Waterhole*
- *Quarry*
- *Landing ground*

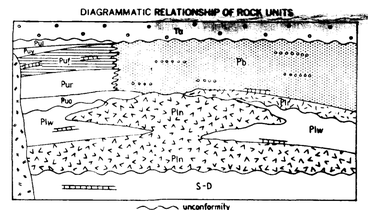
- *Road*
- *Vehicle track*
- *Railway and siding; height in feet, instrument levelled*
- "Thuriba" / HS — *Homestead*
- *Photo Centre Point - Run/Number (Ba - Baralaba, Mo - Monto, Du - Duaringa)*

QUEENSLAND: CAIRNS, TOWNSVILLE, ROCKHAMPTON, CHARLEVILLE, BRISBANE

INDEX TO 1:250,000 SHEET AREAS

DUARINGA SF 55-16	ROCKHAMPTON SF 56-13
BARALABA SG 55-4	MONTO SG 56-1

DIAGRAMMATIC RELATIONSHIP OF ROCK UNITS



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Drawn by: E.H.J. Feeken

Sections

(partly diagrammatic)

Scale: $\frac{V}{H} = 1$