COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF NATIONAL DEVELOPMENT

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

Record 1971/11

PRELIMINARY NOTES ON THE GEOLOGY OF THE VILLAGE CREEK AREA

by

A.G. Rossiter

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* A.G. Rossiter mapped and reported on the Village Creek area during the University summer vacation of 1970/71; he undertook the assignment as a student geologist working with the No. 1 A.C.T. Engineering Geology Group.

PRELIMINARY NOTES ON THE GEOLOGY OF THE VILLAGE CREEK AREA, A.C.T.

SUMMARY

The Village Creek area consists mainly of gently undulating country, in which isolated hills rise a few hundred feet above the general level. Thick soil covers much of the area. The bedrock, where exposed, consists predominantly of welded ash flow tuff probably of Silurian age. Three bodies of very coarsely porphyritic rocks appear to intrude the pyroclastic rocks. These are possibly high level intrusions related to the more deep-seated granite of the Murrumbidgee batholith. One very small outcrop of sandstone occurs in the area; it does not appear to be tuffaceous and may represent a small slice faulted into the volcanics. Several faults can be recognized by the associated shearing, close jointing, and physical decomposition of the bedrock.

INTRODUCTION

The Village Creek area lies to the southwest of Canberra. The area investigated extends from Mt Taylor westwards and southwards to the Murrumbidgee River. These notes are based on mapping of rock outcrop during December, 1970, and earlier work by Gardner (1968). Sheet P52 of the A.C.T. 1:9600 Planning Series was used as a base map. The purpose of the mapping was to provide geological information which may aid in the urban development of the area.

TOPOGRAPHY

Prominent topographic features are Mt Taylor, Mt Forster, Mt Neighbour and a large hill just south of it, and the Urambi hills. The rest of the area is gently undulating. Outcrop is concentrated around the areas of high relief; in the low-lying parts it is confined largely to the creek beds.

The drainage pattern is dendritic. The principal streams draining the area are Village Creek, Tuggeranong Creek, Allens Creek and McQuoid Creek; they all flow into the Murrumbidgee. They contain little or no water except after rain. Thick soil covers much of the area and has been deeply gullied by the creeks; channels range in depth up to about 15 feet (5 m). The Murrumbidgee in the Kambah Pool region and upstream almost as far as the junction with Tuggeranong Creek is incised deeply forming a gorge more than 100 feet (30 m) deep with very steep sides. In this particular part of its course it is a youthful stream.

DESCRIPTIVE GEOLOGY

Apart from a very small outcrop of sandstone (E 8700; S21300) the bedrock of the area mapped consists entirely of igneous rocks. These are of two types - welded tuff of dacitic and rhyodacitic composition and a porphyritic rock of dacitic composition that is not of pyroclastic origin.

The dacitic porphyry occurs at three localities - outcropping over two fairly large areas in the northwest and occurring as a very small exposure just south of Mt Taylor. The rock consists of very large phenocrysts of quartz and plagioclase with some biotite set in a fine-grained holocrystalline groundmass of quartz and feldspar (Appendix, thin sections 70360084, 70360090, 70360091). The rocks from all three localities are very similar and appear to be closely related. Study of the thin sections indicated that the groundmass crystallized under conditions of low pressure although the phenocrysts may have crystallized at considerable depth. This would suggest either an extrusive or very shallow intrusive origin. The fact that the porphyries occur in areas of high relief indicates their resistance to erosion and if they represented an originally extensive flow, present day outcrops might be expected to be more widespread. Thus, at this stage, the hypothesis of an intrusive origin is preferred. In places the contacts of the 'intrusions' appear to be sheared but no other information suggesting either an extrusive or an intrusive origin was found. Such information may be forthcoming in road cuttings when urban development of the area takes place. Petrographically this rock is very similar to the 'MacDonald Granite' regarded by Malcolm (1954) as a 'sill-like extension of the rock of the Murrumbidgee batholith'.* Such an origin is possible for the porphyries of the Village Creek area - one would expect higher level intrusions related to the main batholith to be preserved in the downthrown block to the east of the Murrumbidgee fault, while deeper level granite would occur on the upthrown side of the fault. If in fact these intrusions are of the same age as the Murrumbidgee batholith then the volcanic rocks of the area are all older.

The volcanics of the area appear to be entirely of pyroclastic origin. They consist of crystals of quartz and altered feldspar, with evidence of strain and shattering, set in a groundmass that in most cases appears to have been glassy and has subsequently been wholly or partially devitrified (Appendix, thin sections 70360082, 70360083, 70360085, 70360092-, 70360094). They are welded tuffs. In matters of detail these rocks vary considerably - in some the groundmass is spherulitic, some have flow structure in the groundmass and the compositions range, as seen in the percentage of alkali feldspar, from dacitic to rhyodacitic. Flow structures indicate that at least some are consolidated ash-flow deposits. The volcanics were mapped on the basis of colour - those in the east of the map area have a pinkish appearance while those elsewhere are bluish in colour.

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* Radiometric age determination suggests that the batholith is Upper Silurian or Lower Devonian in age (Evernden & Richards, 1962).

Nowhere was the actual contact between the two observed and the nature of the boundary is not known. The rocks to the east appear to be more rhyodacitic in composition; however, on the whole they are quite similar, and the degree of variation within each unit approaches that across the actual boundary shown on the map (Plate 2). This general similarity suggests that all the volcanics are products of the same general phase of volcanicity, but minor variations have resulted between the tuffs extruded during different eruptions. The fact that both the pink tuffs and the blue both seem to be intruded by porphyries is further suggestive of similarity in age i.e. both are older than the intrusives. The volcanics are younger than the Upper Silurian sediments of the Yarralumla Formation (Opik, 1958). If they predate the Murrumbidgee Batholith, most probably they are Upper Silurian in age.

STRUCTURAL GEOLOGY

Faults

The mapping delineated several zones of shearing and close jointing which are most probably related to faulting. Where such zones were relatively continuous and could be traced for fairly long distances, faults were marked in the accompanying map (Plate 2). However, several zones of shearing occurred at more or less isolated localities where the bedrock was not covered by soil and, although the presence of a fault was implied, its nature and direction could not be determined. Many other faults are probably hidden by the soil which covers most of the area.

Two parallel faults running north are shown on the map (Plate 2). The more westerly of these running close to where Village Creek crosses the Kambah Road was mapped accurately in the present investigation, the one to the east of this is based on the mapping of Gardner (1968). The presence of the former is indicated by shearing and close jointing which can be seen at several places along Village Creek. In some lenticular zones a few feet wide the rock is softened by weathering but elsewhere the hardness of the rock seems little affected by the shearing. Chemical alteration in the fault zone does not appear to have had very great effect but veins of chlorite and epidote occurring in fractures are very numerous and some quartz veins are present. Some or all of these characteristics are also exhibited by the other faults in the area.

Shearing was observed in Tuggeranong Creek in several places (Plate 1). The shear zone nearest the mouth of the creek (E 12400; S 34800) is about 50 feet (15 m) wide and appears to be a major structure. It seems to strike in a north-northwest direction but could not be traced for any great distance because of lack of outcrop.

Several zones of shearing implying faulting occur in Allens Creek; these are shown on Plate 1. A pronounced linear trend of the course of the stream in its upper reaches picked up on air-photographs

is perhaps related to faulting; the orientation (about 060°) of the supposed fault is consistent with that of the shearing observed. Lower down along Allens Creek, close to its mouth, further shearing is encountered. Here the fault seems to be striking roughly north. On the map (Plate 2) two faults are shown in Allens Creek but the data available is also consistent with a single curved structure.

Further shearing is found on the other side of the Kambah Pool Road in McQuoid Creek and two of its tributaries. Two faults are shown on Plate 2. Paucity of exposure prevents these being traced for any great distances. Possibly they are related to one another or to the fault in the upper reaches of Allens Creek. A zone of shearing occurs in a creek bed to the north of these faults (E 4400; S 2600). The nature and orientation of any fault which might be present cannot be determined from this single exposure.

There is some evidence that the porphyries have, at least in part, faulted boundaries. The north-eastern boundary of the largest porphyry is possibly a fault. Along the line separating porphyry from tuff both shearing and weathering were observed and a small outcrop of highly sheared sandstone (E 8700; S 21300) possibly represents a slice along a major fault. A fault also cuts the western boundary of the same intrusion and shearing occurs on the northern flanks of Mt Forster.

Joints

Jointing is particularly prominent in the blue tuff but occurs also in the other rocks of the area. The spacing varies from several feet in places to an inch or less in the vicinity of faults. In Tuggeranong Creek (E 14000; S 33100) a very prominent set of joints strikes approximately east and dips vertically and at high angles to the horizontal. Another prominent joint set strikes 150°-170° and again dips steeply. These trends are widespread throughout the area although they are by no means the only ones and many sets with different orientations occur. Northerly trending joints are particularly well developed along the Murrumbidgee River near the junction with Allens Creek. In general the joints are closed but some are open (up to a quarter of an inch - 6 mm) with an earthy infilling.

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APPENDIX

Petrographic Descriptions of rocks collected in the Village Creek Area

The numbers below refer to the registered numbers of the thin sections.

70360082

Blue grey Co-ordinates: E 1400; S 33300

The hand specimen is bluish-green in colour with numerous light coloured crystals of quartz and feldspar. Very thin veins of a green mineral can be seen crossing the specimen.

In thin section the rock is seen to consist of large crystals of quartz and feldspar in places altered to chlorite and sericite set in a fine-grained and partially glassy groundmass. Epidote is common.

The quartz grains are mainly angular but some are rounded, and range up to about 4 mm across. Commonly the borders are irregular with frequent inlets to the groundmass. Many of the quartz crystals show evidence of strain, in undulose extinction and fracturing. Occasionally the latter resembles two cleavages at right angles but more commonly the fractures are curved and irregular. Small granular patches of quartz appear to be the result of recrystallization.

The feldspar crystals are generally smaller than the quartz grains; they range up to 2 mm in diameter. The grain boundaries are angular and somewhat irregular but the crystals show a tendency towards prismatic habit. Generally the feldspar is strongly altered (mainly to sericite) but in most cases remnants of polysynthetic twinning and, more rarely, zoning can be seen. These characteristics indicate that the feldspar is a plagioclase. The maximum extinction angles of albite twins cut normal to (010) are about 30° suggesting that the composition is around about An_{50}. Alkali feldspar does not appear to be present in significant amounts.

Columnar crystals up to about 3 mm long that were possibly originally pyroxene or amphibole have been replaced by epidote, chlorite and an opaque mineral (possibly leucoxene).

The groundmass was originally glassy but has since been partially devitrified to a finely crystalline quartzofeldspathic mass; original brown glass is still abundant however. In places where devitrification has not been so extensive flow structure is preserved and lines in the groundmass appear to wrap around the phenocrysts. Chlorite and equidimensional iron ore occur scattered throughout the groundmass and small veinlets of epidote are not uncommon.

The texture of this rock indicates that it is a tuff and the structures of the groundmass suggest that it is the result of consolidation of an ash-flow deposit. Since plagioclase amounts to more than two-thirds of the total feldspar, the specimen is dacitic in composition.

The rock is a partially devitrified dacitic ash-flow tuff.

70360083

Co-ordinates: E 17300; S 29750

The hand specimen is purplish in colour with abundant light coloured crystals of quartz and feldspar clearly visible.

In thin section the rock is seen to consist of large crystals of quartz and feldspar (usually altered to sericite) set in a very fine-grained groundmass with a high proportion of glass. Epidote is common in the section both replacing original crystals and as very tiny veins. Opaque iron ore and alteration products associated with it are also abundant.

Quartz occurs as large clear grains up to about 4 mm across. Most have rounded outlines but some are angular; commonly the grain boundaries are embayed. There is abundant evidence of strain in the form of both fracturing and undulose extinction.

The feldspar has all been strongly altered and consequently identification is difficult, however alkali feldspar seems to be present in significant amounts. Polysynthetic twinning is preserved in places, indicating plagioclase. Hence the composition is rhyodacitic. In general the feldspar crystals are smaller than those of quartz, ranging up to about 3 mm in diameter. Sometimes euhedral crystals occur but more commonly they are somewhat irregular. The phenocrysts occur in a wide range of sizes.

A flakey mineral (possibly mica) has been replaced by epidote and the same mineral occurs as small irregular veins throughout the section; chlorite also occurs but is less common. An opaque mineral probably iron ore, is abundant.

Part of the groundmass has been devitrified to a very fine-grained mass of quartzofeldspathic material but it is still largely glassy. The brown alteration product present may be palagonite resulting from breakdown of the glass. The groundmass appears to consist of glassy fragments that have been welded together; the boundaries of these fragments are preserved by lines of iron-rich material.

The rock is a partially devitrified rhyodacitic welded tuff.

70360084

Co-ordinates: E 12300; S 25500

In hand specimen the rock has a speckled appearance with white quartz crystals, green feldspar and dark ferromagnesian material set in a pinkish matrix. Some of the crystals are very large.

The thin section is seen to consist of large crystals of quartz, feldspar (that has generally been altered to sericite) and an altered ferromagnesian mineral now represented by aggregates of epidote and chlorite, set in a fine-grained wholly crystalline groundmass. Small amounts of iron ore are scattered throughout the slide.

The quartz occurs as corroded grains generally with rounded boundaries. Signs of strain (fracturing and undulose extinction) are evident to a certain extent but are not as widely developed as in the tuffaceous rocks of the area. In the slide quartz grains as large as 5 mm across occur but in the hand specimen much larger crystals can be seen.

The feldspar is very altered but all the identifiable grains are plagioclase and it is probable that most of those that cannot be recognized because of alteration are similar. Maximum extinction angles on the albite twins cut normal to (010) are about 30° which corresponds to a composition of about An_{50} i.e. andesine or labradorite. The feldspar crystals are often large (up to about 6 mm diameter). Zoning occurs in some crystals.

Scattered throughout the section are aggregates of chlorite and epidote which presumably have replaced an original ferromagnesian mineral. They range up to 2 mm in diameter. Alteration is complete and there are no relics of the original material; the crystals had a platy habit and the mineral was possibly a mica. In other cases chlorite seems to be replacing plagioclase.

The groundmass is fine-grained but holocrystalline. It consists for the most part of quartz and feldspar but epidote and chlorite are abundant. Opaque iron ore is common as is a brownish mineral which seems to be derived from it.

The texture of this rock suggests that it formed by consolidation of a cooling magma in contrast to the tuffs which dominate the area. The predominance of plagioclase makes the composition dacitic.

The rock is a dacitic porphyry.

70360085

Co-ordinates: E 17600; S 30200

In hand specimen the rock is pinkish grey in colour with very prominent white grains of quartz and green crystals of feldspar set in a fine-grained matrix.

In thin section the rock consists of phenocrysts of quartz and feldspar enclosed by a groundmass that has been devitrified in places but elsewhere is glassy and in part spherulitic. Epidote, chlorite and sericite are common as alteration products; iron ore is also abundant occurring both as fine dust and as small granular crystals.

Quartz occurs in angular to rounded crystals up to 6 mm in diameter. Grain boundaries are anhedral with inlets to the groundmass common. Undulose extinction and irregular fracturing are indicative of strain. Granular aggregates of tiny quartz crystals occur here and there suggesting that recrystallization has taken place.

The feldspar phenocrysts are mainly plagioclase that has been altered in varying degrees to sericite. The grains range up to about 3 mm in diameter. Some are euhedral but most are somewhat irregular; a prismatic habit is common. Extinction angles on the albite twins cut normal to (010) range up to about 35° indicating that the plagioclase is probably labradorite or andesine. Phenocrysts of alkali feldspar occur but are rare. They form rounded, fractured crystals and are recognized by their exsolution textures. The plagioclase is also fractured. Alkali feldspar seems to be very abundant in the groundmass and consequently the rock has a rhyodacitic composition.

Epidote is associated with chlorite and iron ore in aggregates replacing a pre-existing ferromagnesian mineral possibly a mica. Epidote also occurs with quartz in narrow but persistent veins.

The groundmass is patchy. Some parts of it have been devitrified to a quartzofeldspathic aggregate but a large proportion remains glassy. The brown glass contains spherulites which are probably of orthoclase. Yellowish-brown material in the section may be palagonite resulting from the alteration of glass.

The rock is a partially devitrified rhyodacitic tuff.

70360090

Co-ordinates: E 20650; S 24750

In hand specimen the rock consists of large quartz and feldspar crystals white, pink and green in colour in a pinkish fine-grained matrix. The specimen is very coarse-grained with some of the phenocrysts ranging up to 2 cm across.

The thin section shows the rock to consist of large grains of quartz and feldspar (which is usually altered to sericite), ragged flakes of biotite frequently associated with epidote and to a lesser extent chlorite and small amounts of iron ore set in a fine-grained holocrystalline groundmass.

The quartz occurs as crystals up to 6 mm in diameter in the section but much larger crystals can be seen in the hand specimen. Usually the grains are euhedral and somewhat equidimensional but irregular outlines with embayments are not uncommon. There is evidence of slight strain - slightly undulose extinction and minor fracturing - but these features are not nearly so extensively developed as in the tuffaceous rocks of the area.

The feldspar has been completely altered to sericite in places but a few of the larger crystals have cores of unaltered plagioclase and it seems reasonable to assume that the bulk of the feldspar is similar, and hence that the rock has a dacitic composition. The feldspar was originally prismatic in habit with crystals up to 7 mm across. Extinction angles on the albite twins cut normal to (010) are small indicating a sodic plagioclase but the number of unaltered grains is too few for an accurate determination of the composition to be made.

Large irregular flakes of biotite (up to 3 mm across) are common in the section. The mica is a brownish green slightly pleochroic variety and epidote commonly occurs as small lenses along the cleavage planes of the former.

Chlorite occurs as small scattered patches generally associated with iron ore.

The groundmass consists of a fine-grained but holocrystalline aggregate of quartz and feldspar with abundant brown micaceous material and minor epidote, chlorite and iron ore. The holocrystalline nature of the rock, together with its texture, indicates that it is the result of consolidation of a magma rather than of pyroclastic origin.

The rock is a dacitic porphyry.

70360091 rhyolite porphyry

Co-ordinates: E 8100; S 24700

In hand specimen the rock consists of large light coloured (pink, green, white) crystals of quartz and feldspar set in a fine-grained pinkish grey groundmass. Scattered dark coloured grains of a ferromagnesian mineral can also be seen.

In thin section the rock is seen to be dominated by very large phenocrysts of quartz and feldspar. Flakes of biotite have largely been replaced by chlorite and epidote but some of the original

mineral remains; iron ore is scattered sparsely throughout the rock. The matrix is holocrystalline although fine-grained.

The quartz occurs in large crystals up to more than 1 cm across. Some have euhedral outlines but more commonly the grains are corroded and the boundaries very sinuous. Quartz also occurs as very narrow veins persisting for relatively large distances through the section.

As is usually the case in the rocks of the area the feldspar phenocrysts have been largely altered to sericite but in numerous instances polysynthetic twinning and zoning indicate that most of the feldspar is plagioclase. Extinction angles on the albite twins are small indicating a sodic composition (oligoclase and andesine). The crystals range in shape from prismatic to equidimensional and are usually subhedral; they are generally smaller than the quartz grains.

Platy crystals of biotite have been largely replaced by epidote and chlorite and many of them have a dusting of iron ore. Iron ore also occurs as small scattered equidimensional crystals.

The groundmass is largely quartzofeldspathic with many recognizable crystals of plagioclase. Irregular blotches and veins of epidote and some micaceous material constitute the remainder of the matrix.

The predominance of plagioclase over alkali feldspar in both the phenocrysts and the groundmass indicates that the rock has a dacitic composition.

The rock is a dacitic porphyry.

70360092

Co-ordinates: E 16600; S 23900

In hand specimen the rock is blue-grey in colour with prominent light coloured phenocrysts of quartz and feldspar.

The thin section showed the rock to consist of large crystals of quartz, feldspar, biotite more or less altered to epidote and chlorite and occasional iron ore enclosed by a patchy groundmass.

The quartz grains of this rock are of two types - irregular angular grains up to 4 mm across and smaller rounded crystals generally less than 1 mm in diameter. Undulose extinction and fracturing occur in both types of quartz crystal, the latter often resembling two perpendicular sets of cleavages. Recrystallization has occurred in places. Quartz is the dominant mineral of the rock.

The feldspar appears to be mainly plagioclase although alteration makes identification of some grains difficult. Sericite is the main alteration product. The feldspar ranges in grain size up to about 3 mm and the crystals are somewhat irregular in shape. Small

rounded quartz grains are poikilitically enclosed by one plagioclase crystal. The plagioclase is not abundant in the section and consequently its composition could not be determined.

Where it has not been altered beyond recognition the biotite is a brown pleochnic variety. There is ample evidence that the flakes have been subjected to strain - the cleavage is bent and kinked wavy extinction is common. The plates vary up to about 2 mm in length. Alteration to epidote and chlorite varies in degree. Frequently the mica is associated with iron ore.

The groundmass is largely quartzofeldspathic with minor alteration products such as chlorite. It is holocrystalline but some patches are coarser than others. It probably represents the product of devitrification of an original glassy matrix, the patchy texture being due to the process of devitrification occurring to differing extents in different parts of the rock. In places there is a pronounced parallelism of the minerals of the groundmass (best seen with uncrossed polars) suggesting some sort of flow before consolidation; possibly the rock is the product of an ash-flow.

The fragmentary texture of the rock indicates that it is a tuff; the predominance of plagioclase indicates a dacitic composition.

The rock is a devitrified dacitic tuff.

70360093

Pink RD.

Co-ordinates: E 16800; S 25150

In hand specimen this rock consists of white quartz and pink feldspar phenocrysts in a bluish-pink matrix. Overall it has a pinkish colour.

In thin section it is composed of quartz, feldspar and ferromagnesian phenocrysts in a partially crystalline, partially spherulitic groundmass. Here the percentage of ferromagnesian minerals is higher than in most of the other rocks examined.

The quartz phenocrysts are angular and irregular in shape. One crystal in the section is nearly 1 cm long but generally they are much smaller. Undulose extinction and fracturing are characteristic. Granular aggregates of quartz occurring frequently throughout the rock indicate recrystallization.

The feldspar has been altered to both sericite and chlorite but many grains can be identified as sodic plagioclase. Other more altered grains may be either alkali feldspar or plagioclase. The crystals range up to 3 mm in diameter and usually have an equidimensional shape with a subhedral outline.

Biotite and alteration products derived from it constitute the most abundant ferromagnesian minerals in the rock. It occurs as small, generally elongate, flakes up to 2 mm across. It is greenish-brown in colour and is slightly pleochroic. In places alteration to epidote and chlorite has occurred and iron-rich opaque material is often associated with the biotite.

Here and there in the section are euhedral hexagonal crystals, consisting of chlorite and an unidentified brownish alteration product, in which traces of cleavage are preserved suggesting that the original mineral may have been a pyroxene. Again iron ore is frequently associated.

The groundmass is very patchy - in places it consists of brown spherulitic glass, in others devitrification to a quartzofeldspathic mass has occurred. Alteration is widespread. The spherulites are probably composed of orthoclase; if so the composition of the rock is that of a rhyodacite.

The rock is a partially devitrified rhyodacitic tuff.

70360094

Co-ordinates: E 17850; S 20000

The hand specimen is greenish-grey in colour with prominent white, orange and green phenocrysts of quartz and feldspar.

In thin section it is seen to consist of phenocrysts of quartz, feldspar frequently clouded and altered to sericite, biotite with chlorite and epidote as alteration products and iron ore set in a patchy groundmass which is in part spherulitic. As in the previous section the percentage of ferromagnesian minerals is relatively high.

Quartz occurs as angular to rounded irregular grains; the borders are occasionally embayed. The crystals range up to about 5 mm across. Shattering and undulose extinction are widespread.

A higher proportion of the feldspar phenocrysts in this section are of alkali feldspar. The alkali feldspar occurs as angular to rounded equidimensional grains which are commonly fractured and are always clouded by very fine-grained brownish material. The largest grains are about 3 mm in diameter. The plagioclase crystals are equidimensional and anhedral to subhedral in shape; most of them are altered to sericite. They are probably andesine.

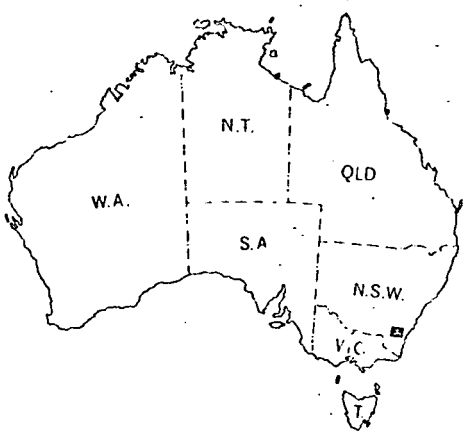
The ferromagnesian minerals tend to occur closely associated in the same areas of the section. Small flakes of biotite associated with epidote and to a lesser extent chlorite together with other indefinite alteration products occur scattered throughout the rock. Iron ore and epidote also tend to be concentrated in such patches. Epidote is also associated with quartz in small veinlets, and it occurs in occasional isolated patches.

This rock is quite similar to the previous section but the groundmass has suffered more severe devitrification, consequently the ratio of crystalline material to glassy spherulitic material is higher. Alteration of the matrix is widespread and a brownish material that is possibly palagonite is abundant. In places there is pronounced flow structure in the groundmass, perhaps it is an ash-flow tuff.

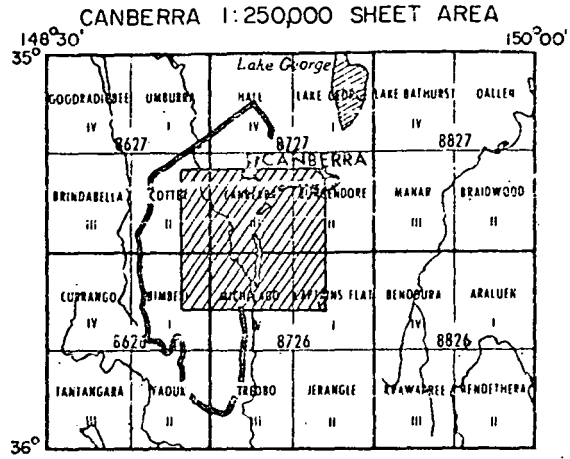
The rock is a partially devitrified rhyodacite tuff.

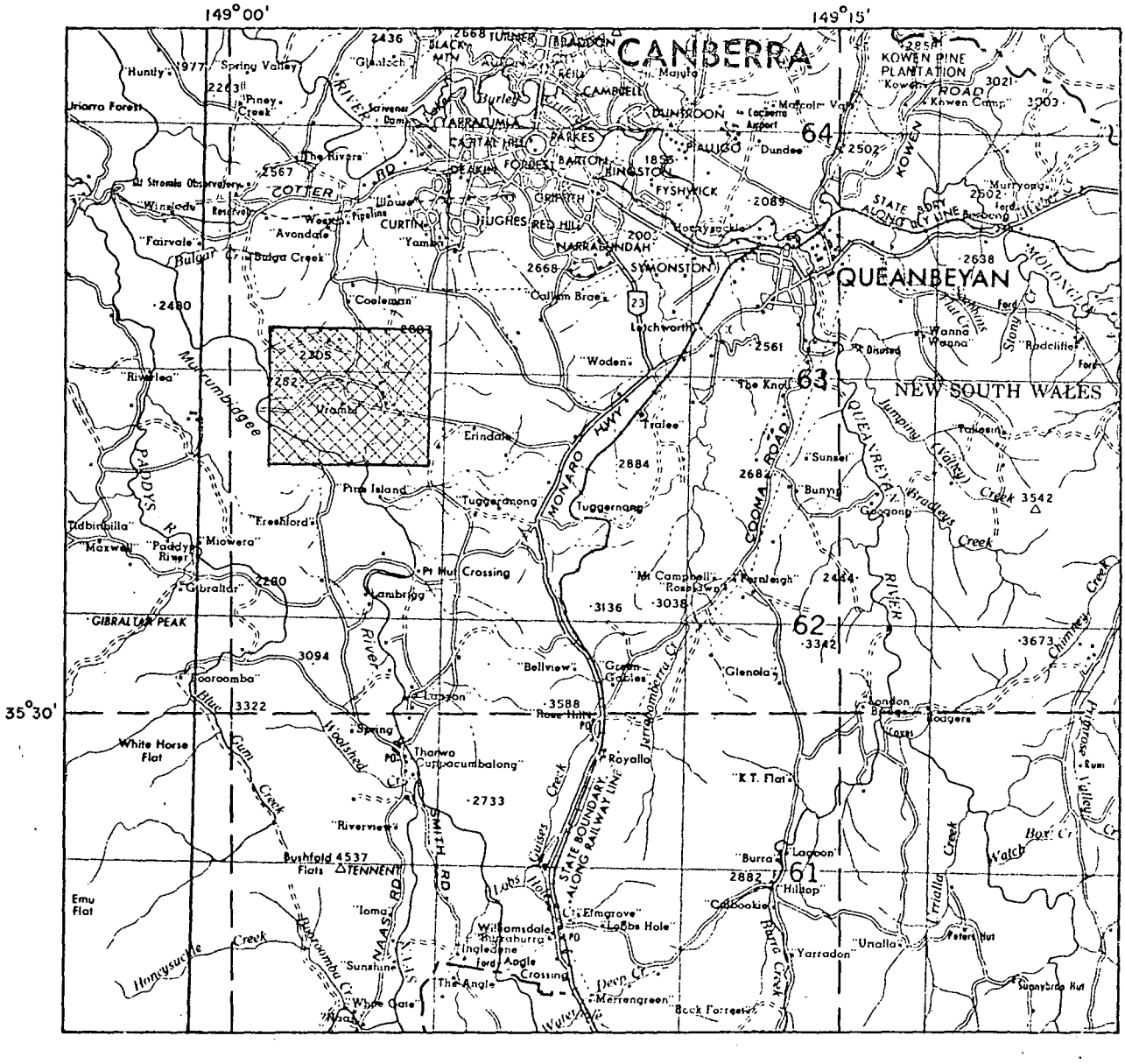
FIGURE 1.

LOCALITY MAP



CANBERRA 1:250,000 SHEET AREA





Map area.

To Accompany Record 1971/11

I55/A16/738

PLATE 1.

GEOLOGY OF THE VILLAGE CREEK AREA

Map showing data collected in field

SCALE 1:9600

FEET 800 0 800 1600 2400 3200 4000 FEET

METRES 200 0 200 400 600 800 1000 METRES

REFERENCE

Silurian to Devonian

- Dacitic porphyry

U. Silurian ('Stromlo Volcanics')

- Pink-purple rhyodacitic tuff
- Blue-green dacitic tuff

- Joint, vertical, showing approximate strike.
- 70 Joint, approximate dip and strike shown.
- Shear zone, direction of shears shown approximately.
- T.S. 703600 82 Thin section locality.

CO-ORDINATES ARE IN FEET WITH ORIGIN AT STROMLO TRIG. STATION.

BASE MAP -

SHEET PS2 - A.C.T 1:9600 PLANNING SERIES

Compiled and Drawn by the Survey Branch, Dept. of the Interior, Canberra, A.C.T.

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS, JAN 1971.
155/A16/739

To accompany Record 1971/11

PLATE 2

SOLID GEOLOGY OF THE VILLAGE CREEK AREA

Map showing interpretation of data

SCALE 1:9600

FEET 800 0 800 1600 2400 3200 8000 FEET

METRES 200 0 200 400 600 800 1000 METRES

REFERENCE

Silurian to Devonian — Dacitic porphyry

U. Silurian ('Stromlo Volcanics') — Pink-purple rhyodacitic tuff

V V — Blue-green dacitic tuff

---------- Geological boundary, position approximate.

— — — Fault, position approximate.

—?—?— Fault, inferred.

----?---- Fault, inferred and concealed.

Large shear zone, showing approximate direction of shears.

CO-ORDINATES ARE IN FEET WITH ORIGIN AT STROMLO TRIG. STATION.

BASE MAP - SHEET P 52 A.C.T 1:9600 PLANNING SERIES. Compiled and Drawn by the Survey Branch Dept. of the Interior, Canberra, A.C.T.

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS, JAN 1971.

155/A16/740

To accompany Record 1971/11