



Figure 3.20: Facies Fq_n with well rounded, imbricated quartzite (q) clast at the top of the sequence.

Figure 3.21: Massive fines facies (Fm) overlying horizontally laminated fines (Fh). Note the colour banding typical for the lower part of the Bamboesberg Member.



Figure 3.23a: Coal and carbonaceous mudstone facies (C), overlain by coarse sandstones of the Indwe Sandstone Member (I).



Figure 3.22: Ripple cross-laminated fines facies (Fr). Scale bar = 1cm.

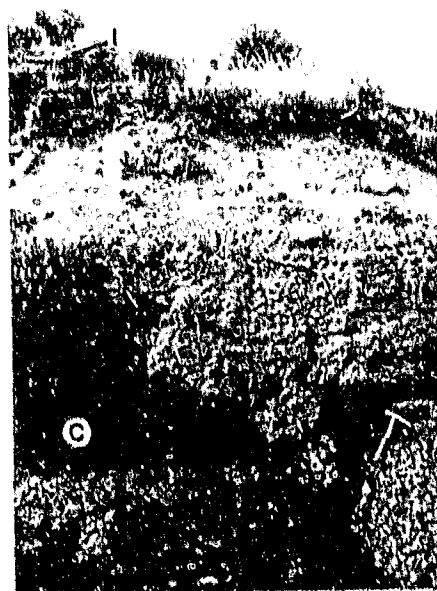




Figure 3.23b: Vitrinite rich coal (C) with concoidal fracture. Scale bar = 1cm.

Figure 3.24: Laterally continuous sheet sandstones (S) of the Bamboesberg Member, with thin interbedded fines (F). Bamboeshoek Valley, Eastern Cape.

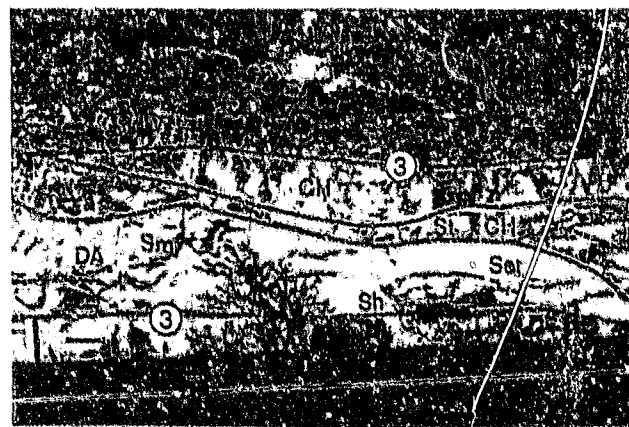
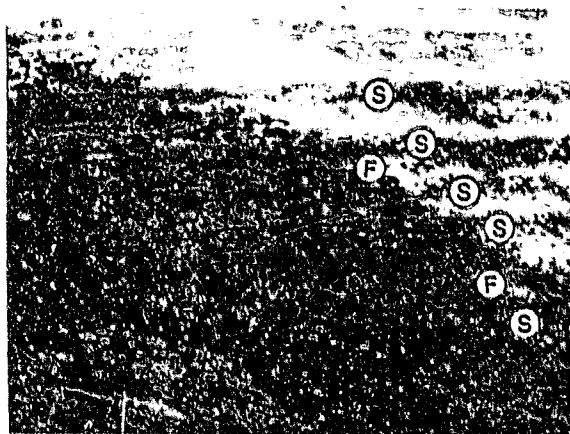
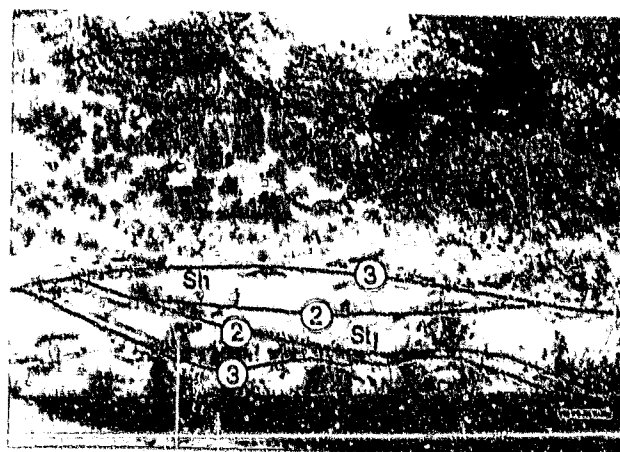
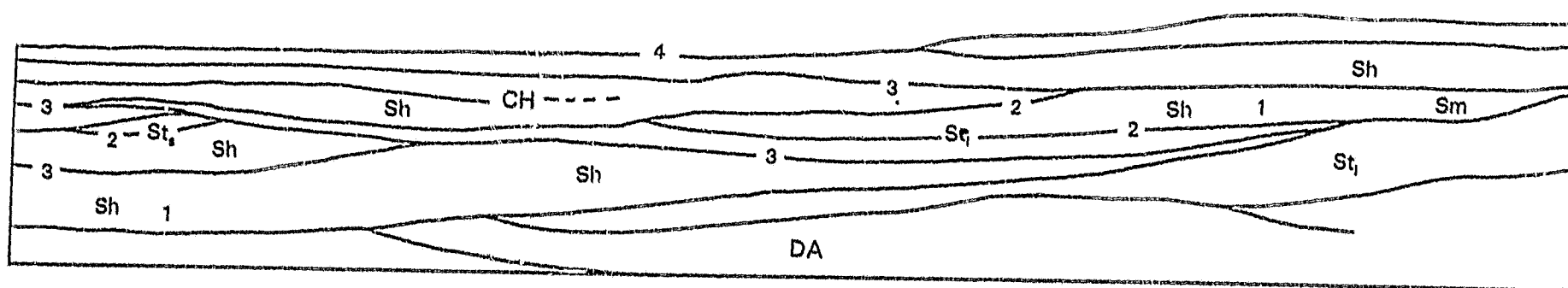
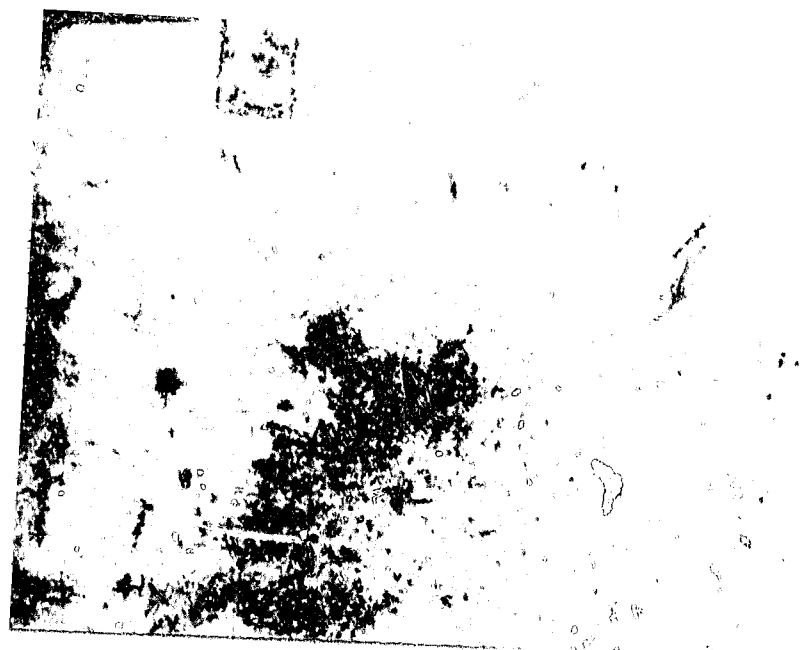


Figure 3.26a: Minor channel element (CH) intersecting a downstream accreted (DA) longitudinal bar. Scale bar = 50cm.

Figure 3.26b: Typical lenticular minor channel fill element (CH). The red colouration is due to the abundance of garnet (Fig.3.16). Scale bar = 50cm.





0 1m

Sandstone 

Fines 

140 320°

Figure 3.25: Lateral profile of typical channel fill sandstone of the Bamboesberg Member, Bushmanshoek Pass, Eastern Cape.





Figure 3.27: Abandoned channel fill of horizontally laminated fines. Roadcut on the R56 west of the town of Molteno.

Figure 3.28: Laterally accreted (LA) transverse bar elements stacked to form a cross-channel bar, Farm Olivafontein, Aliwal North district. Scale bar = 30cm.

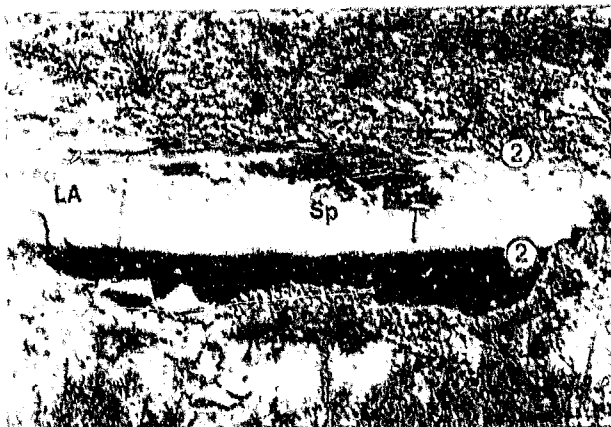
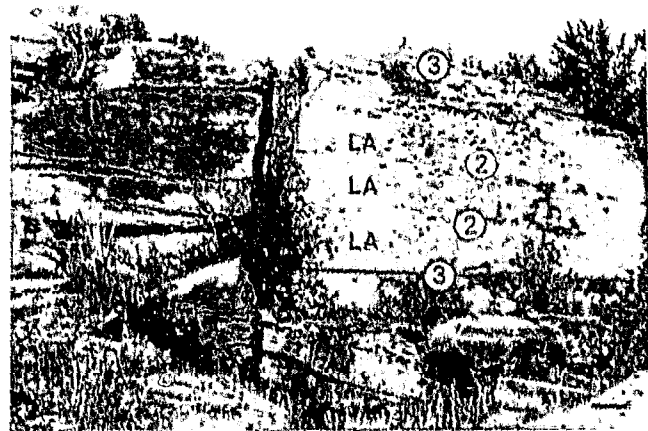


Figure 3.29: Laterally accreted (LA) tabular splay sandstone macroform, Bushmanshoek Pass, Eastern Cape.

Figure 3.30: Downstream accreted (DA) longitudinal bar macroforms and minor channel fill (CH), Bushmanshoek Pass, Eastern Cape.



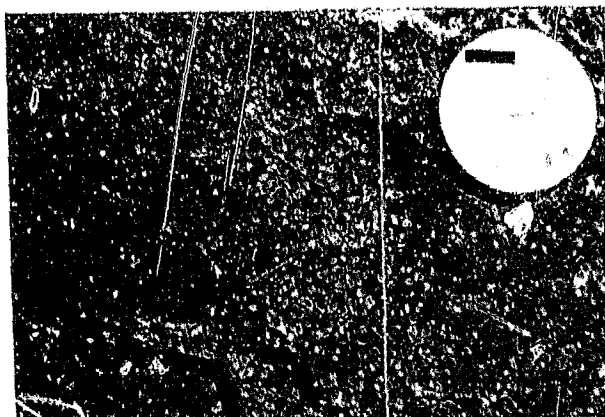


Figure 3.31: Silicified mudrock showing faint desiccation cracks. Farm Norwood, Bamboeshoek Valley, Eastern Cape.

Figure 3.32: Silicified tree trunk in braidplain fines. Upper Bamboesberg Member, Dordrecht, Eastern Cape. Note the concentric growth rings (r).

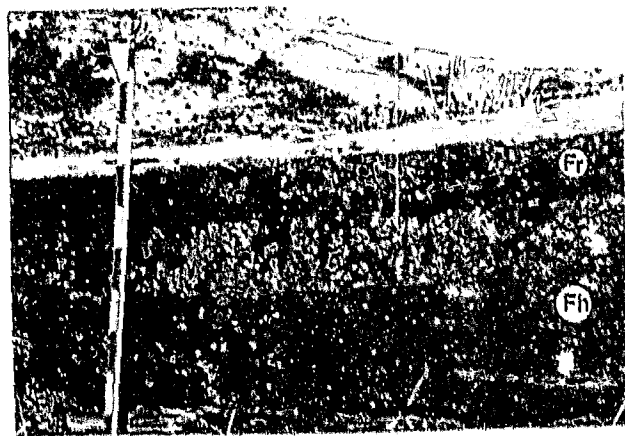
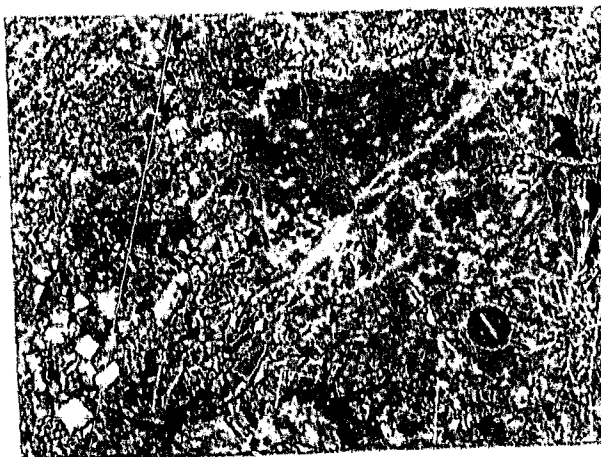


Figure 3.33: Lacustrine facies association showing facies Fh grading upwards into facies Fr. Note the lack of sheet sandstone layers in background. Individual bars on Jacob's staff are 10cm.

Figure 3.34: Monogeneric accumulations of *Heidiphyllum* (H) and *Dicroidium* sp (D) within the lacustrine facies association. Bamboeshoek Valley, Eastern Cape. Scale bar = 1cm.



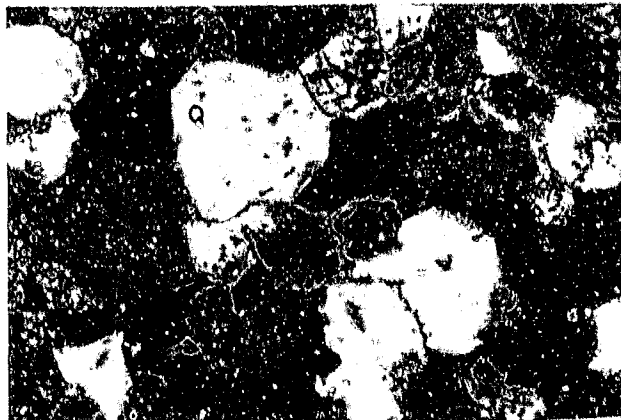


Figure 3.35: Photomicrograph of typical sub-rounded quartz grains (Q) from facies St. Crossed polars, 5X magnification.

Figure 3.36: Photomicrograph of quartz grains (Q) showing concavo-convex contact, heavy minerals and lines of dark inclusions. Crossed polars, 15X magnification.



Figure 3.37a: Photomicrograph of quartz grains (Q) showing irregular secondary overgrowths. The original grain is defined by a rim of inclusions (I). Crossed polars, 5X magnification

Figure 3.37b: Photomicrograph of well rounded quartz grain (Q) showing euhedral secondary overgrowth. The original grain is defined by a rim of inclusions (I). Crossed polars, 5X magnification.

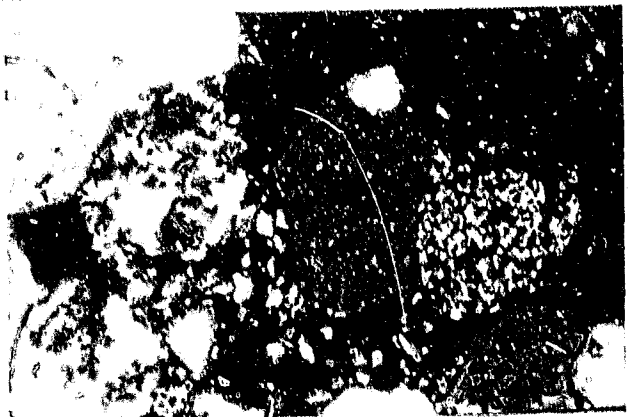




Figure 3.38: Photomicrograph of euhedral sodium plagioclase feldspar (F) showing albitic twinning. Crossed polars, 10X magnification.

Figure 3.39: Photomicrograph of rounded and partially decomposed orthoclase feldspar grain (O). Crossed polars, 10X magnification.



Figure 3.40a: Photomicrograph of fresh, euhedral perthitic microcline (MI). Crossed polars, 15X magnification

Figure 3.40b: Photomicrograph of fresh, well rounded microcline (MI) and polycrystalline quartz grains (Qp). Crossed polars, 10X magnification.



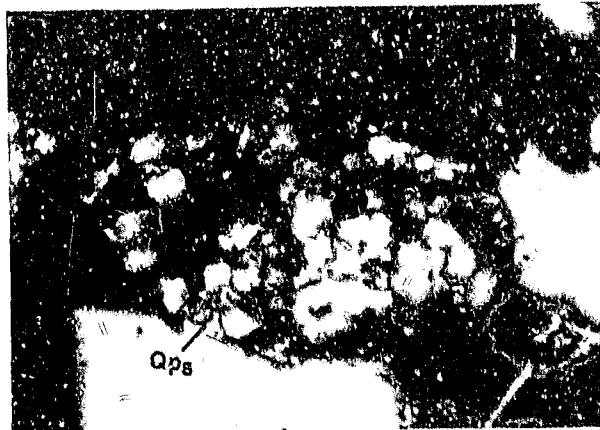


Figure 3.41: Photomicrograph of well rounded sedimentary polycrystalline rock fragment (Qps). Crossed polars, 5X magnification.

Figure 3.42: Photomicrograph of polycrystalline quartz rock fragment of igneous origin (Qpi). Crossed polars, 5X magnification.

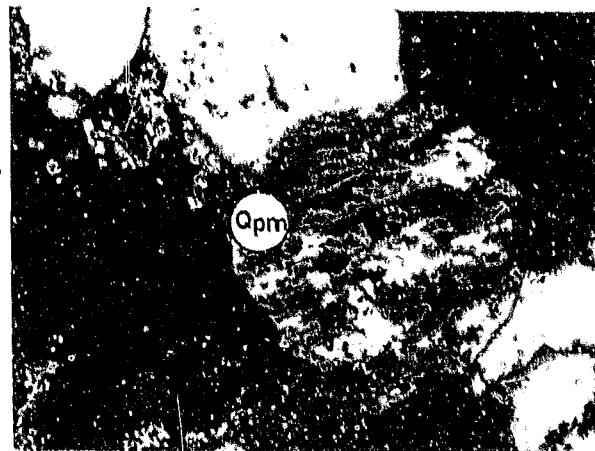
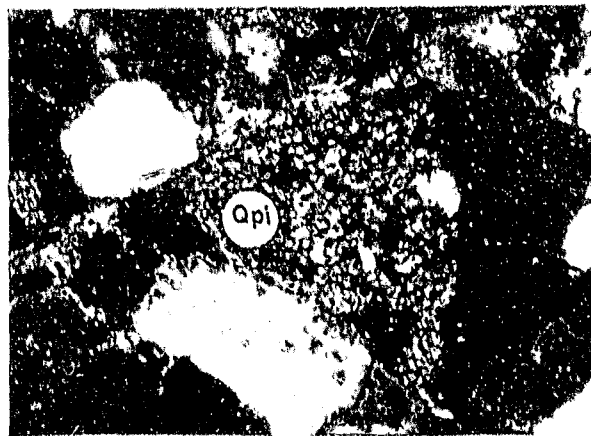


Figure 3.43: Photomicrograph of polycrystalline quartz rock fragment (Qpm), showing a stretched fabric strongly indicative of a metamorphic origin. Crossed polars, 5X magnification.

Figure 3.44: Photomicrograph of quartz arenite clast from the Cape Supergroup. Crossed polars, 10X magnification.



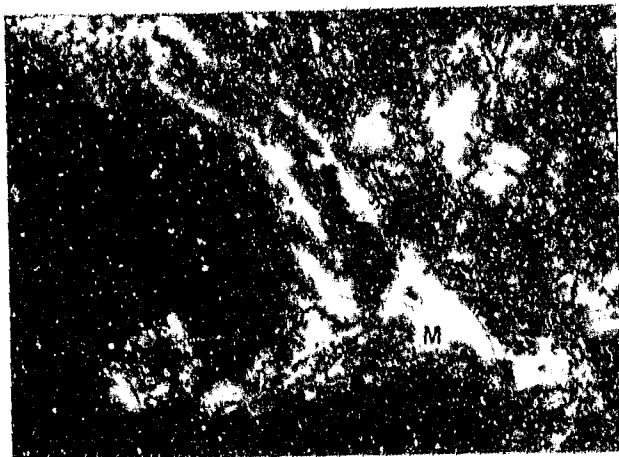


Figure 3.45: Photomicrograph of a detrital grain of muscovite (M). Crossed polars, 40X magnification.

Figure 3.46: Photomicrograph of a detrital grain of biotite (B). Crossed polars, 10X magnification.



Figure 3.47a: Photomicrograph of a well rounded detrital zircon (Zr). Plane polarized light, 10X magnification.



Figure 3.47b: Photomicrograph of a well rounded detrital zircon (Zr). Crossed polars, 10X magnification.

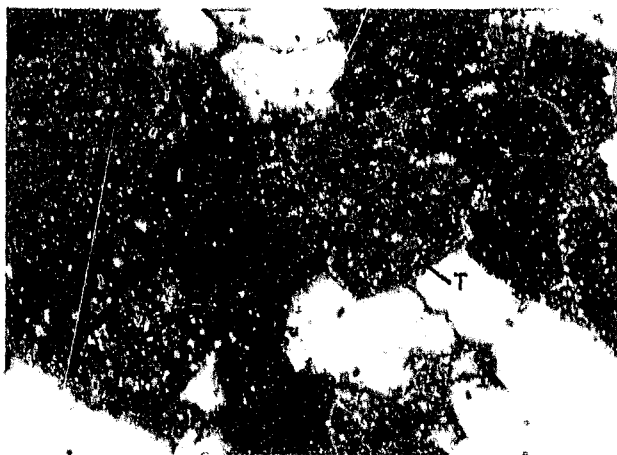


Figure 3.48: Photomicrograph of a detrital tourmaline (T) grain. Crossed polars, 10X magnification.

Figure 3.49: Photomicrograph of oxide rich heavy mineral laminae in facies Sh. Plane polarised light, 10X magnification.

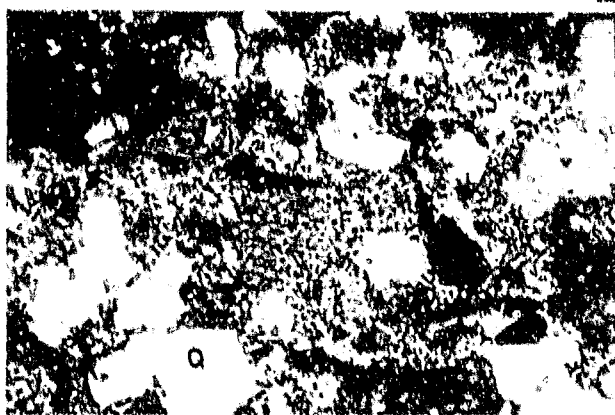


Figure 3.50: Photomicrograph showing quartz grains (Q) in a typical clay matrix, with ghost outline of a decomposed plagioclase feldspar grain (F). Crossed polars, 10X magnification.

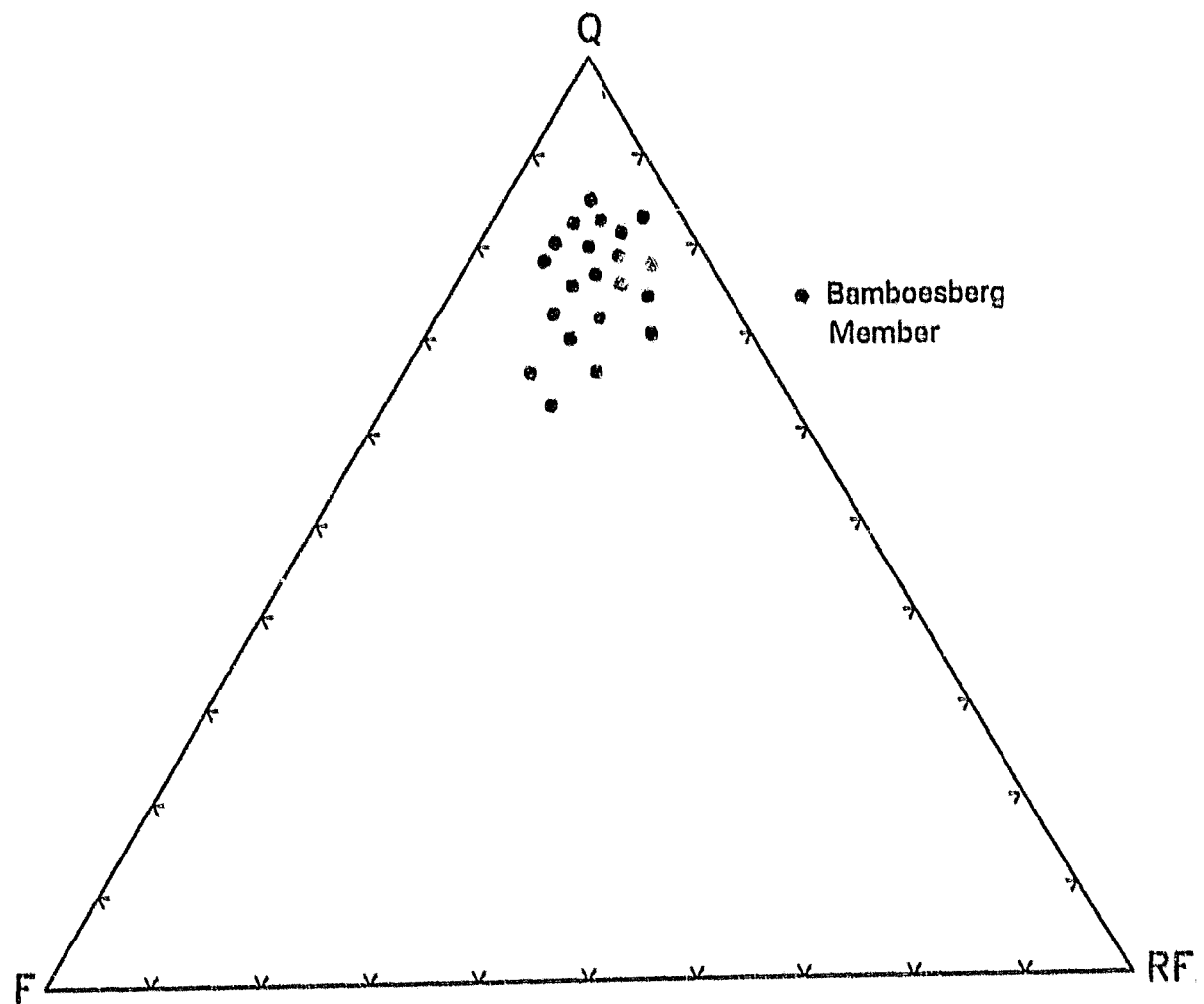


Figure 3.51: Framework grain plot for the sandstones of the Bamboesberg Member.

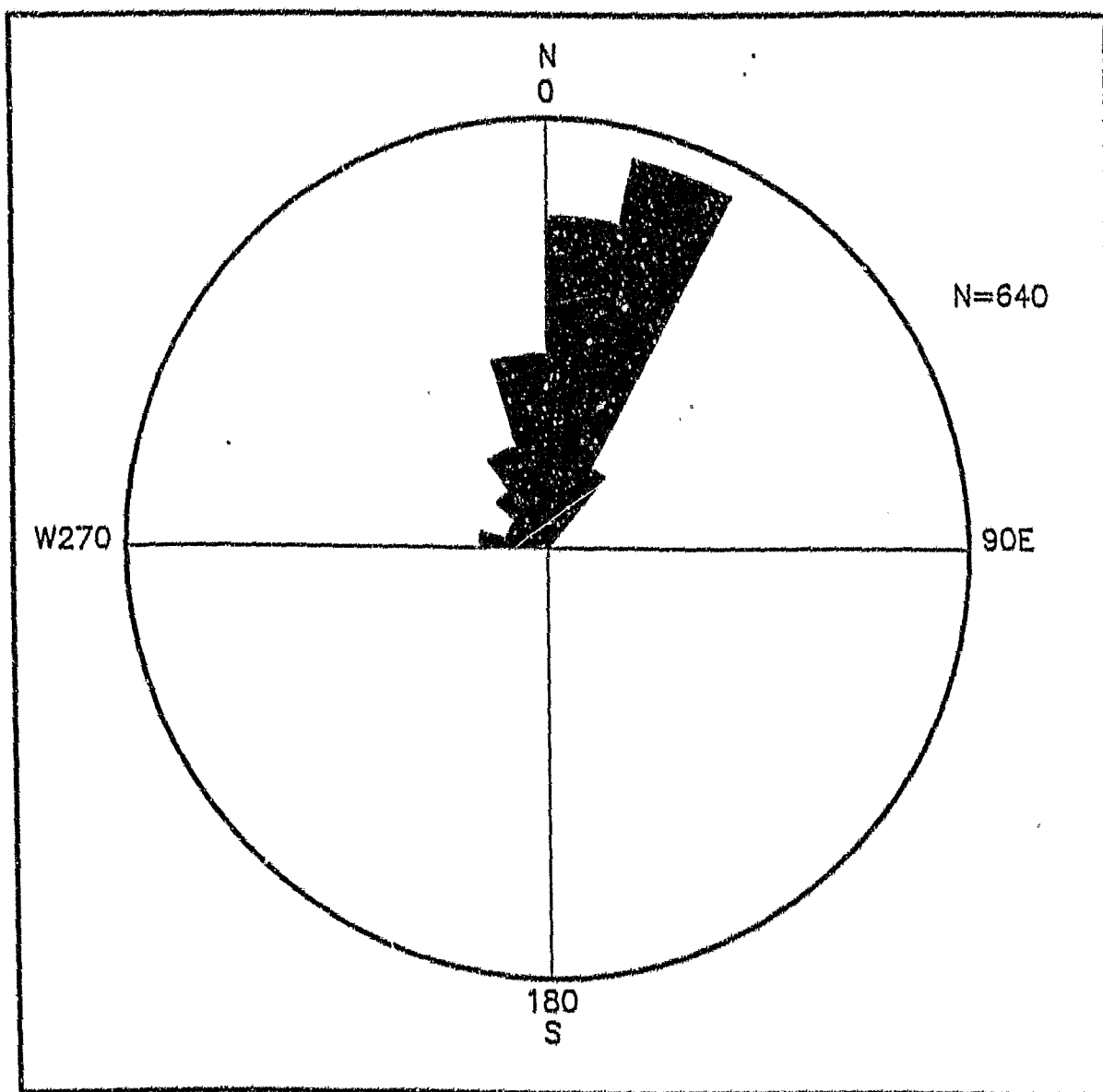


Figure 3.52a: Rose net showing palaeocurrent directions for the Bamboesberg Member in the southwest of the basin.

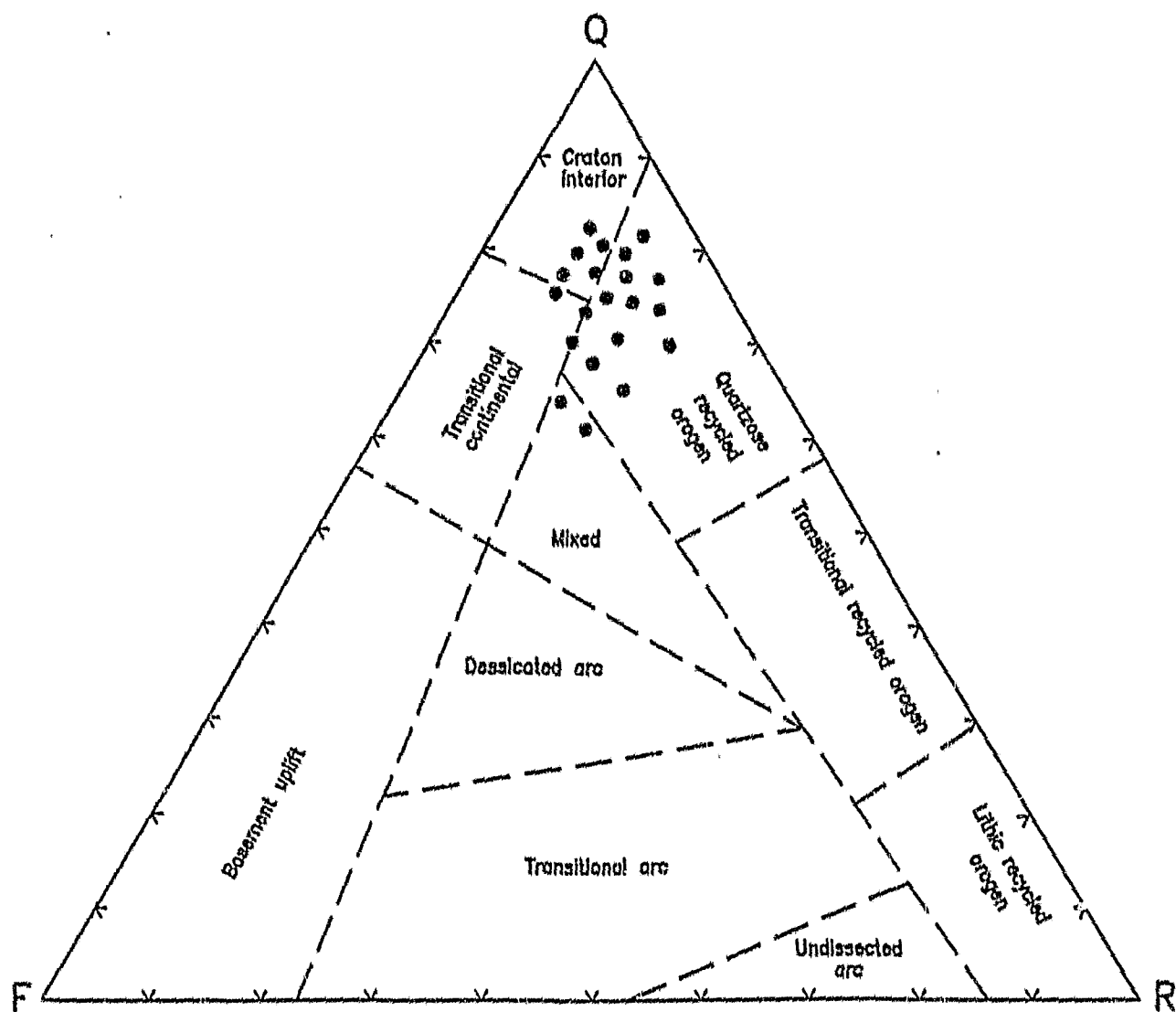


Figure 3.52b:

Framework grain plot for the sandstones of the Bamboesberg Member, with tectonic setting fields from Dickinson *et al* (1983).

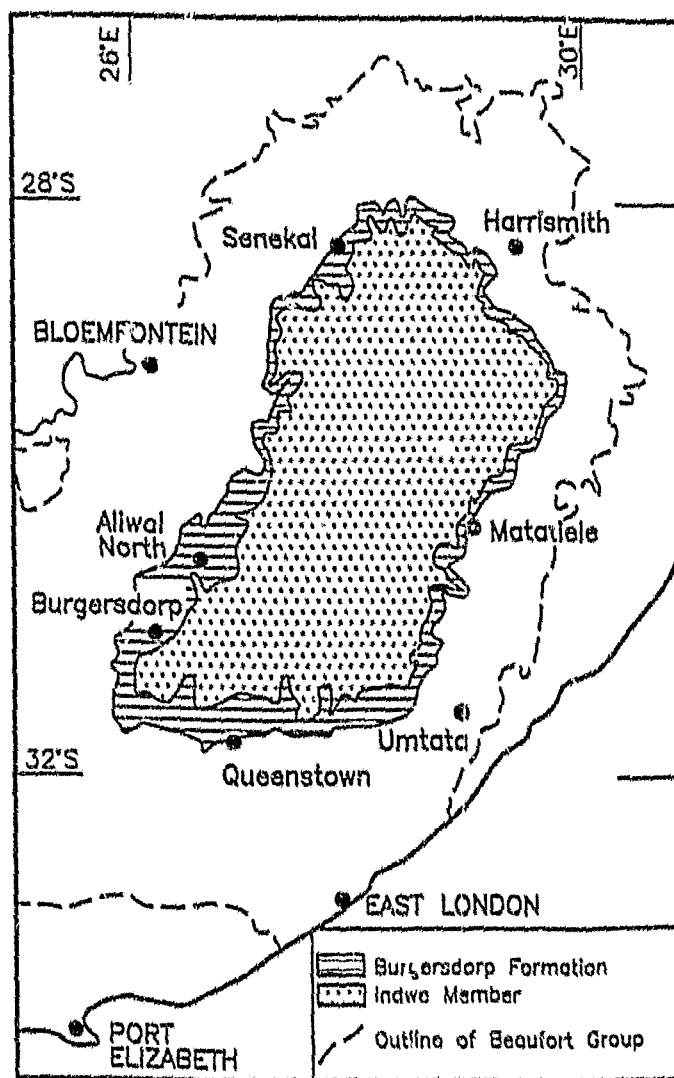


Figure 3.53: Geographical extent of the Indwe Sandstone Member.



Figure 3.54: Soft sediment deformation in the Indwe Sandstone Member. Senekal district, northern Free State.

Figure 3.55: Heterolithic gravel intraclast facies (Ge_h). Note the abundance of quartzite (q) pebbles.



Figure 3.57: Small scale sets of planar cross-stratified gravel facies (Gp).

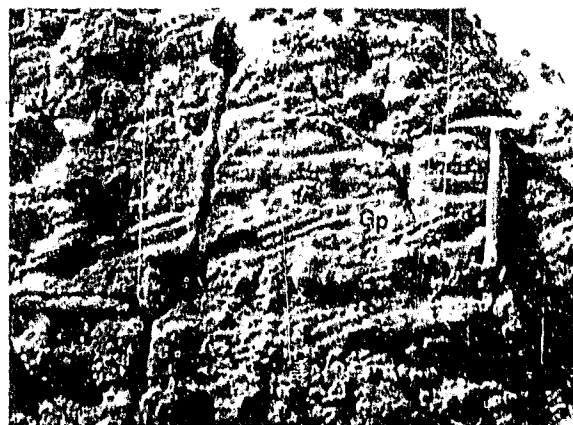
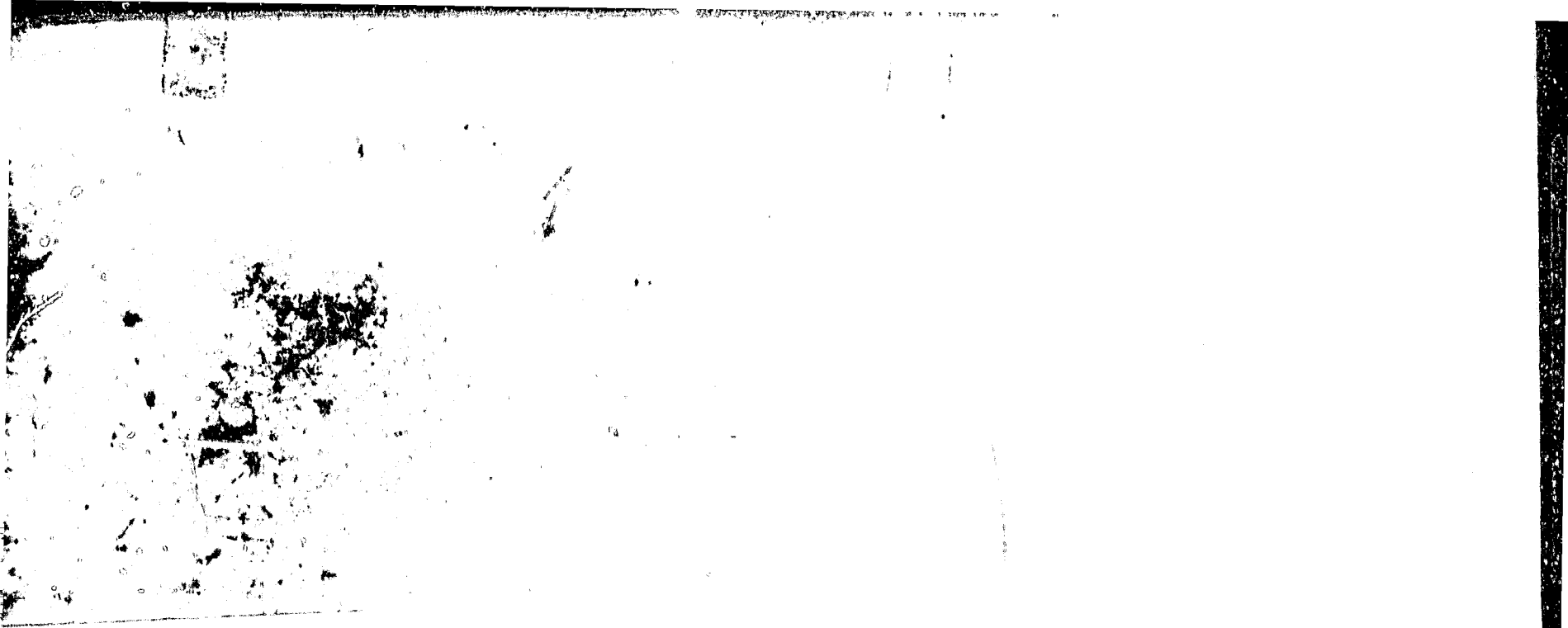


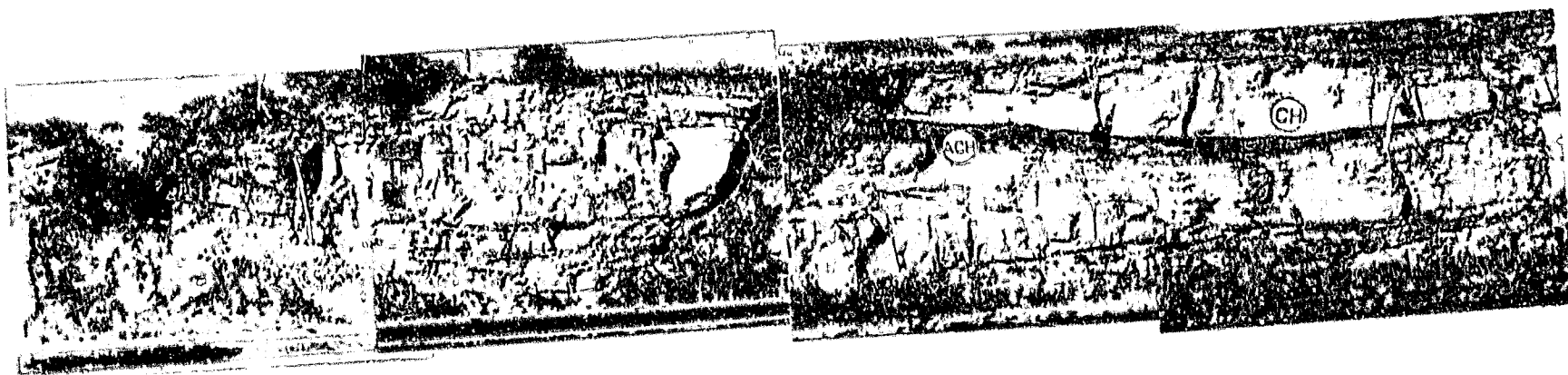
Figure 3.56: Trough cross-stratified gravel facies (Gt) overlying facies Ge_h .



A---A' B---B' C---C' D---D'

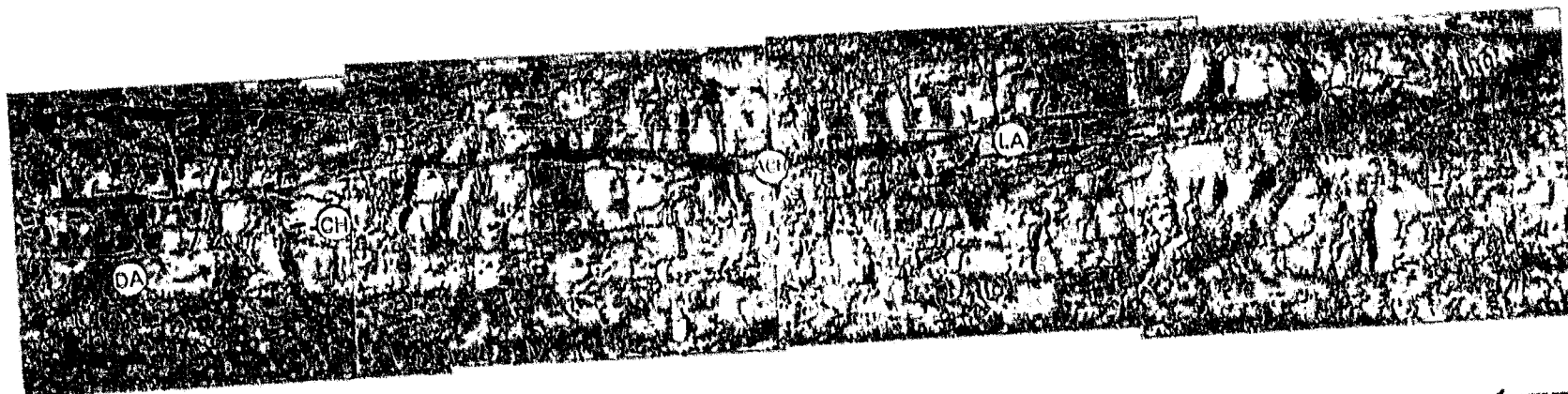
A'

A



B'

B



130 310°

0 2m

Figure 3.58:

Lateral profile of the Indwo Sandstone Member. Roadcut on the R397 between Queenstown and Sterkstroom.

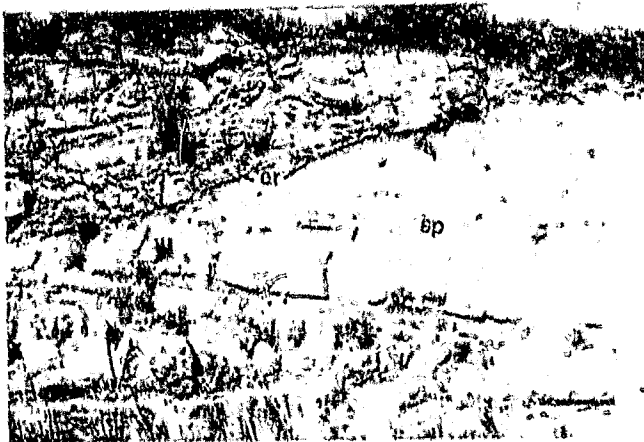


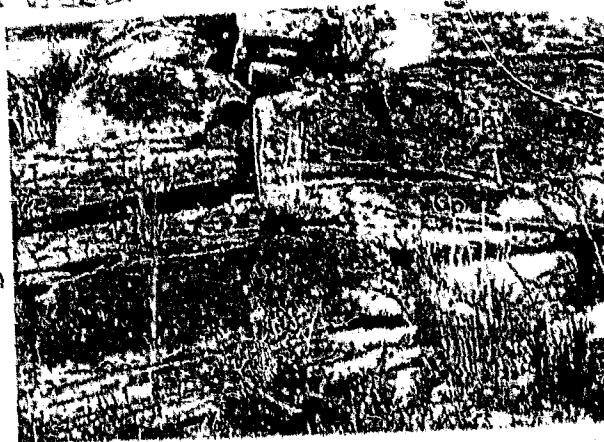
Figure 3.59: Channel complex margin, showing the deeply erosional nature (er) of the basal contact into the braidplain fines. Note also the presence of a thin overbank splay (sp). Scale bar = 1m.

Figure 3.60: Contact (c) between the Bamboesberg (BB) and Indwe Sandstone (I) Members of the Molteno Formation. Note the flat to slightly erosional basal contact.



Figure 3.61: Minor channel fill showing side- (sf) and downstream accretion (da) of bedforms.

Figure 3.62: Tabular sets of large scale planar cross-stratified gravel (Gp) and sandstone facies. Individual units represent laterally accreted transverse bars, which stack to form a sand-flat element.



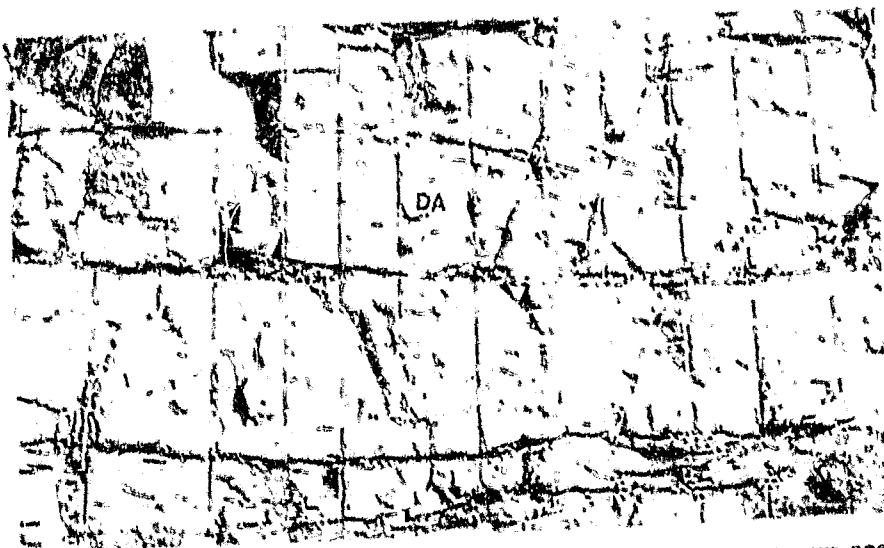


Figure 3.63: Simple downstream accreted (DA) bar elements. The main current direction is left to right in the photograph. Scale bar = 50cm.

Figure 3.64:

DA in-channel barforms showing tracts of minor channel abandonment (Ca) and preservation of fines (F). The main current direction is left to right in the photograph. Scale bar = 50cm.

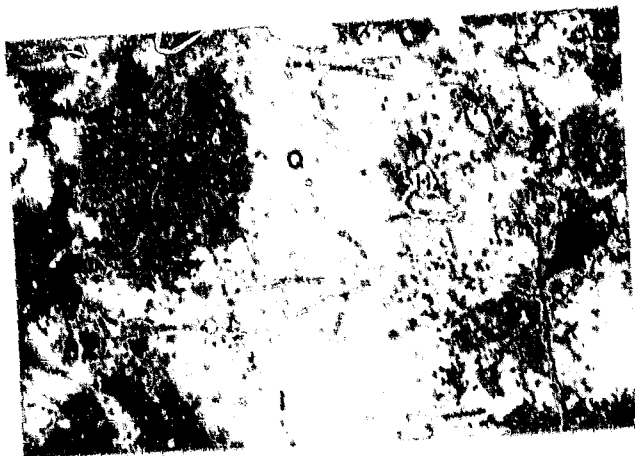
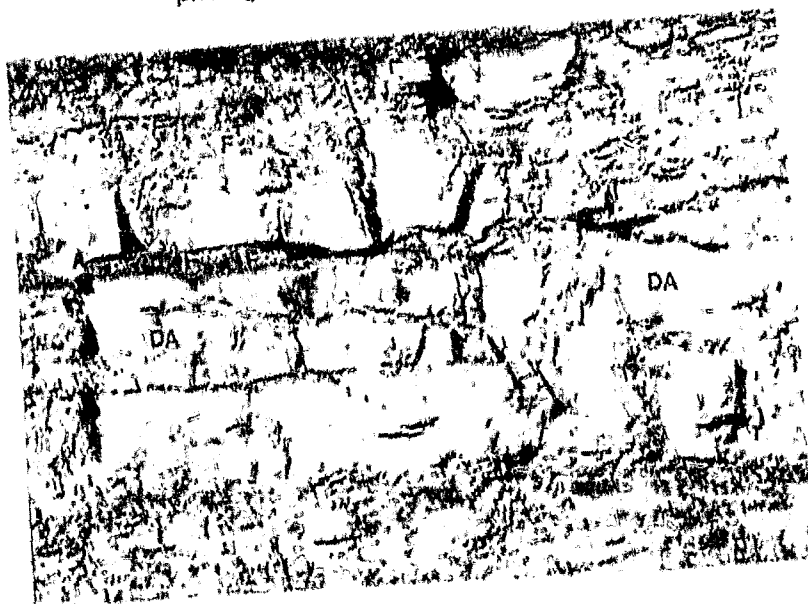


Figure 3.65: Photomicrograph of typical quartz grain (Q) from the Indwe Sandstone Member showing heavy mineral (H) and opaque line inclusions (I). Crossed polars, 10X magnification.

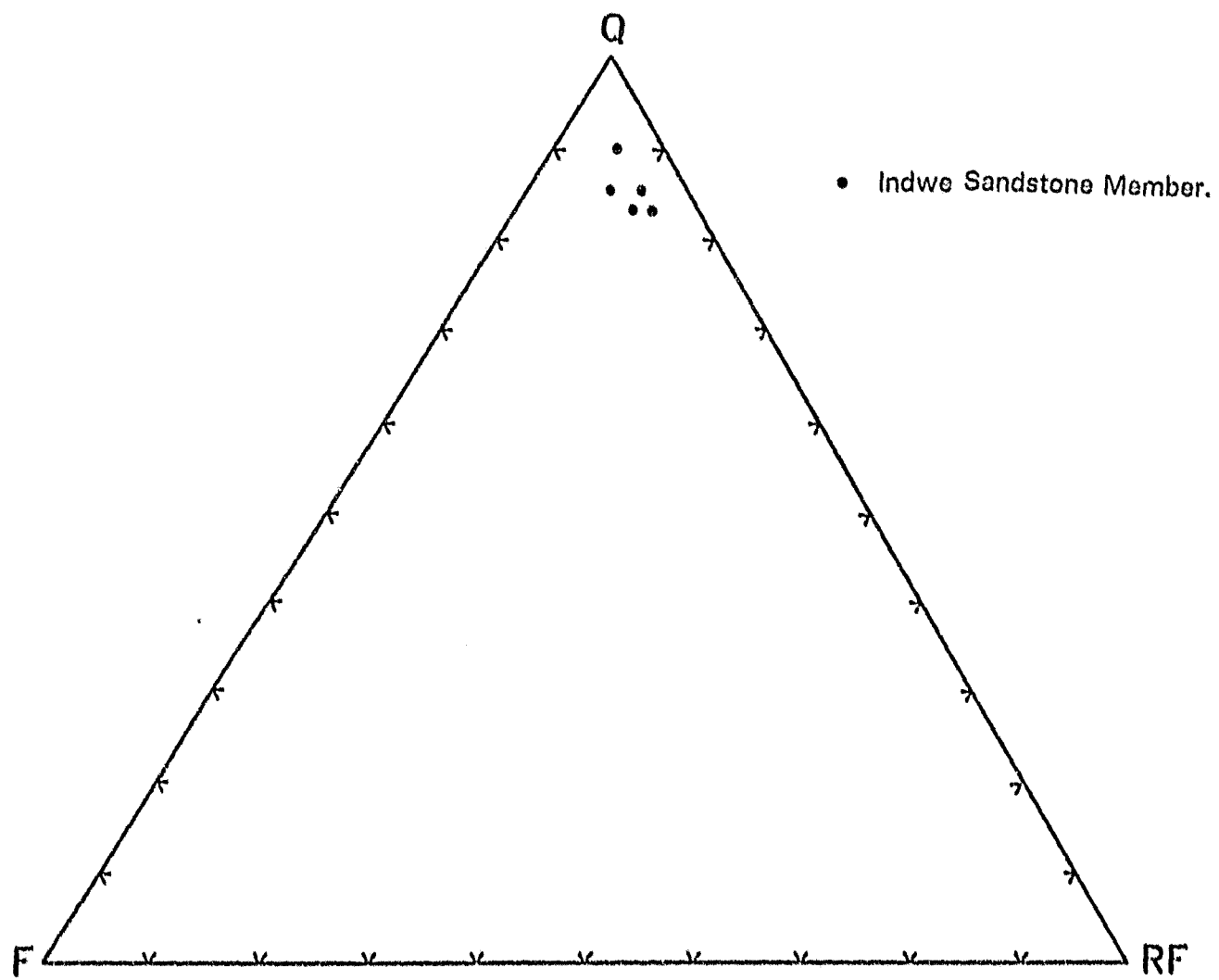


Figure 3.66: Framework grain plot for the sandstones of the Indwe Sandstone Member.

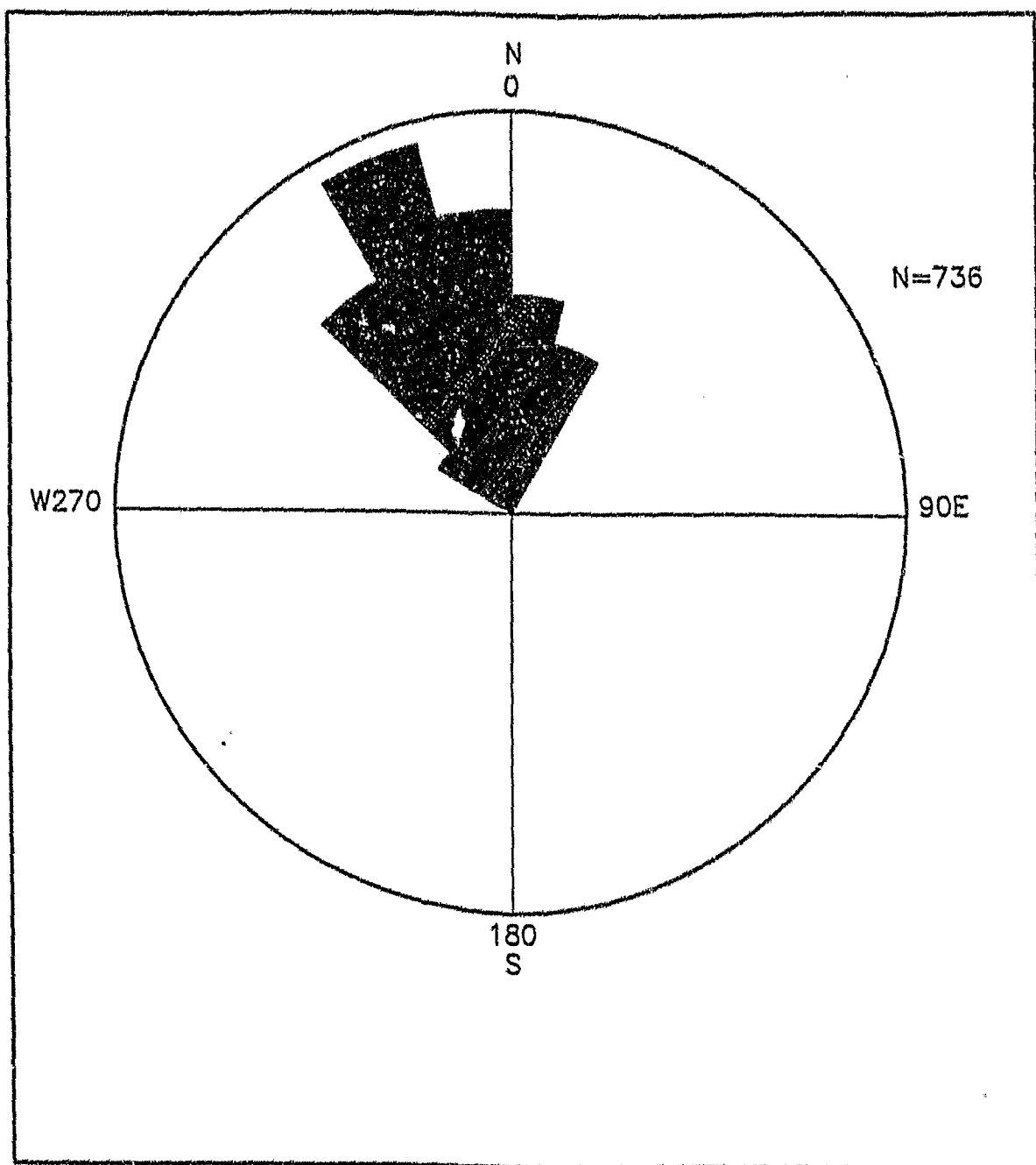


Figure 3.67: Rose net showing palaeocurrent directions for the Indwe Sandstone Member in the south of the basin.

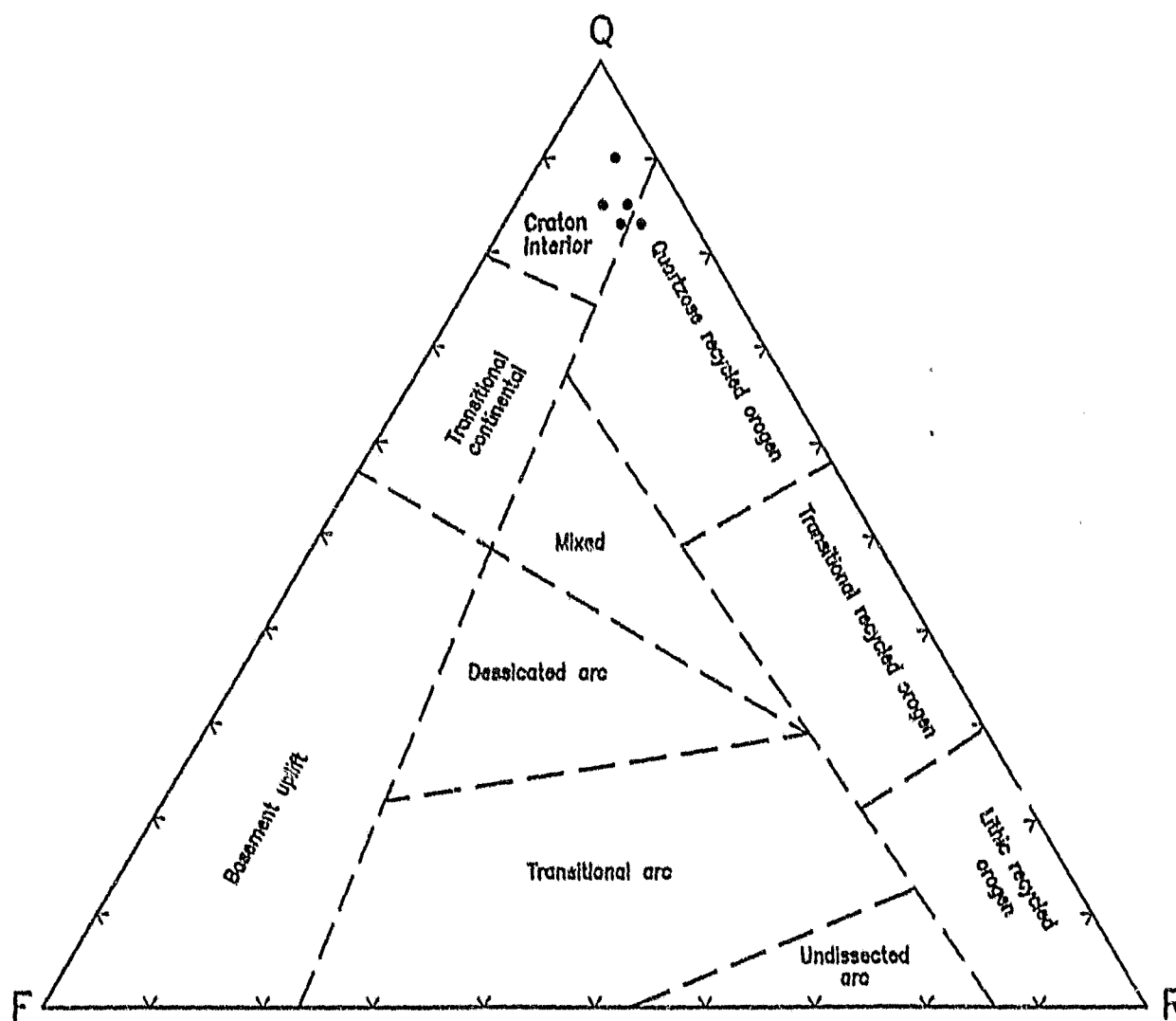
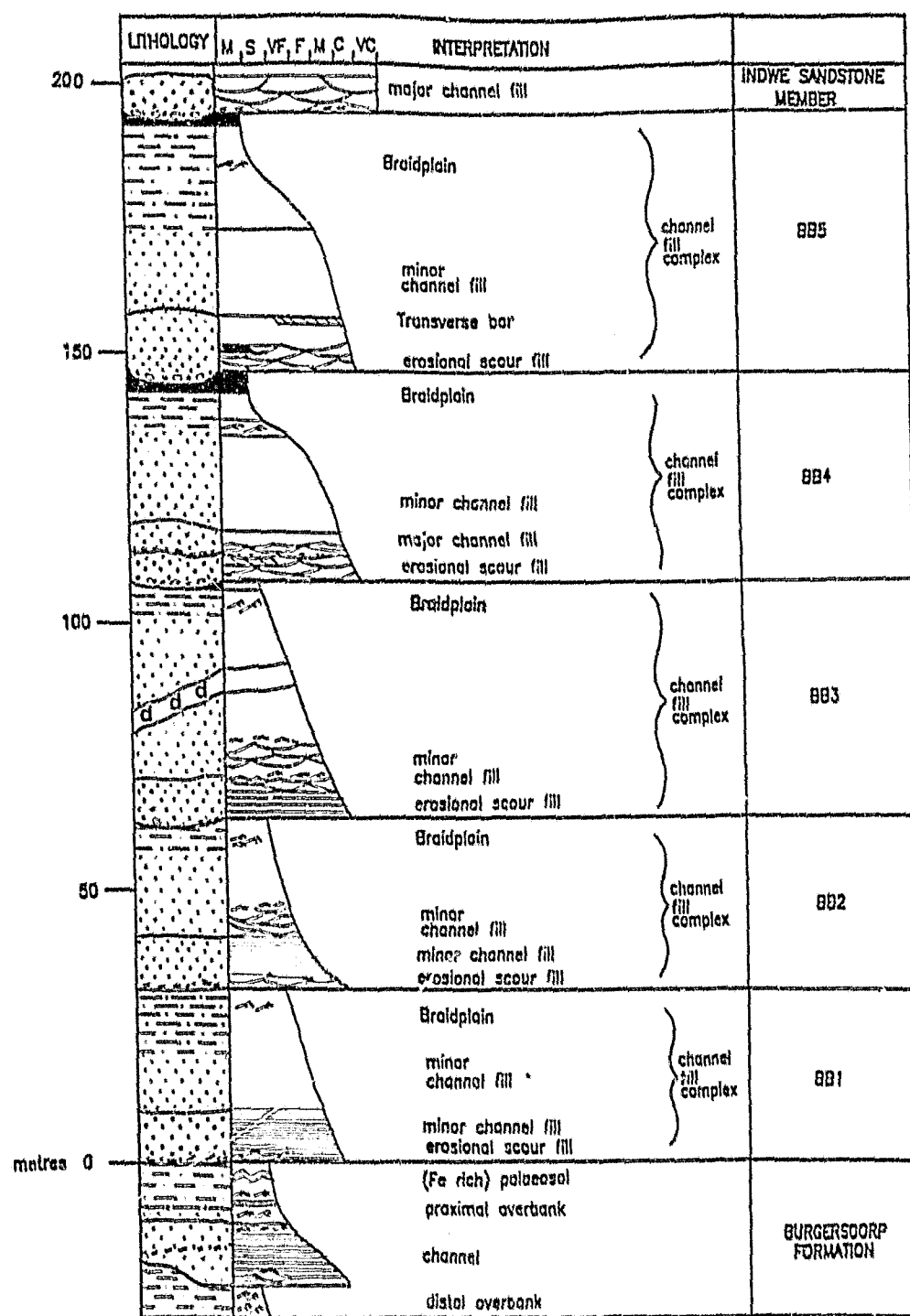


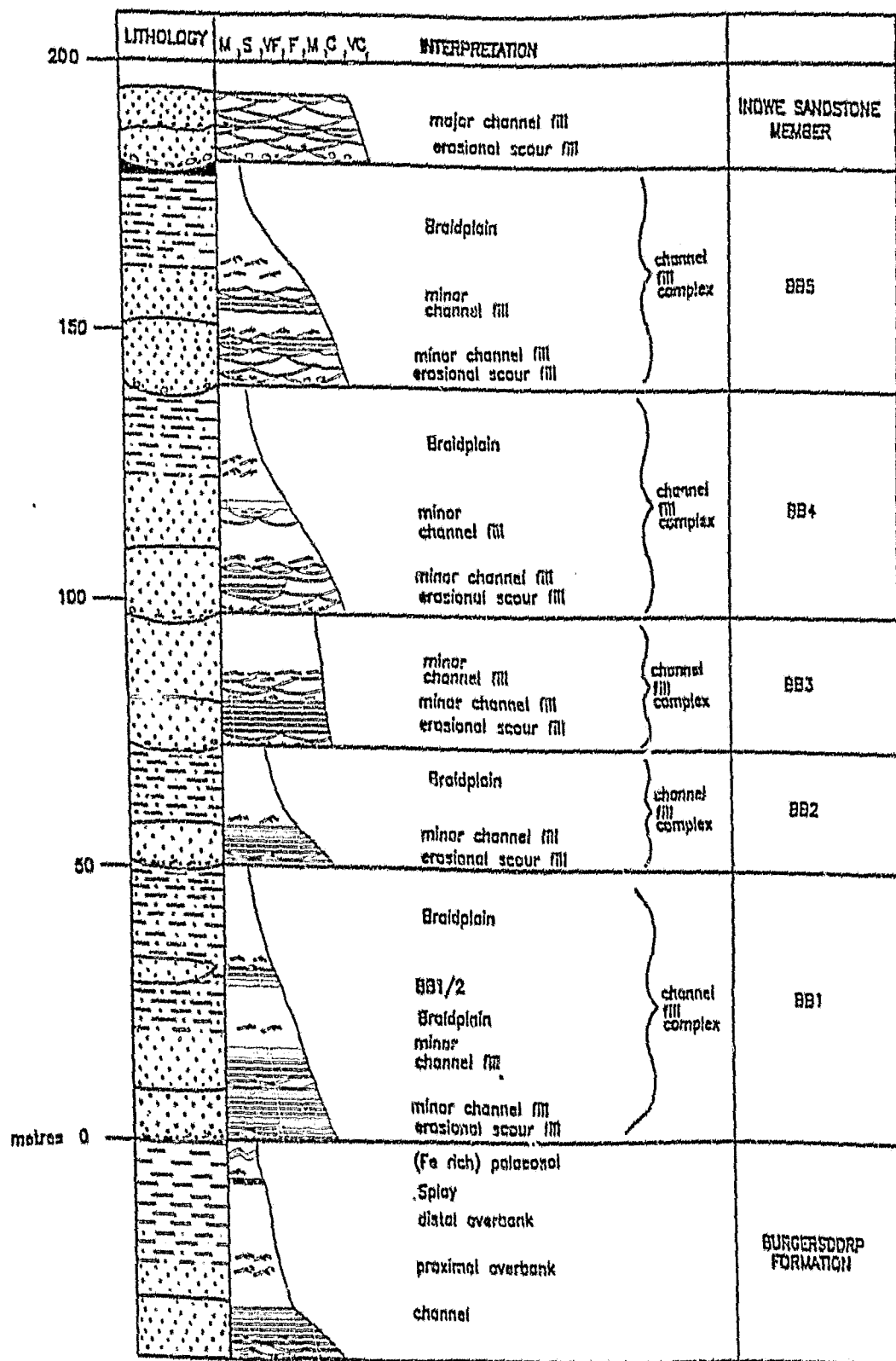
Figure 3.68:

Framework grain plot for the sandstones of the Indwe Sandstone Member, with tectonic setting fields from Dickinson *et al* (1983).



BB=Bamboesberg

Figure 3.78: Stratigraphic section through the Bamboesberg Member at Bushamanshoek Pass.



BB=Bamboesberg

Figure 3.79: Stratigraphic section through the Bamboesberg Member in the Bamboeshoek Valley.

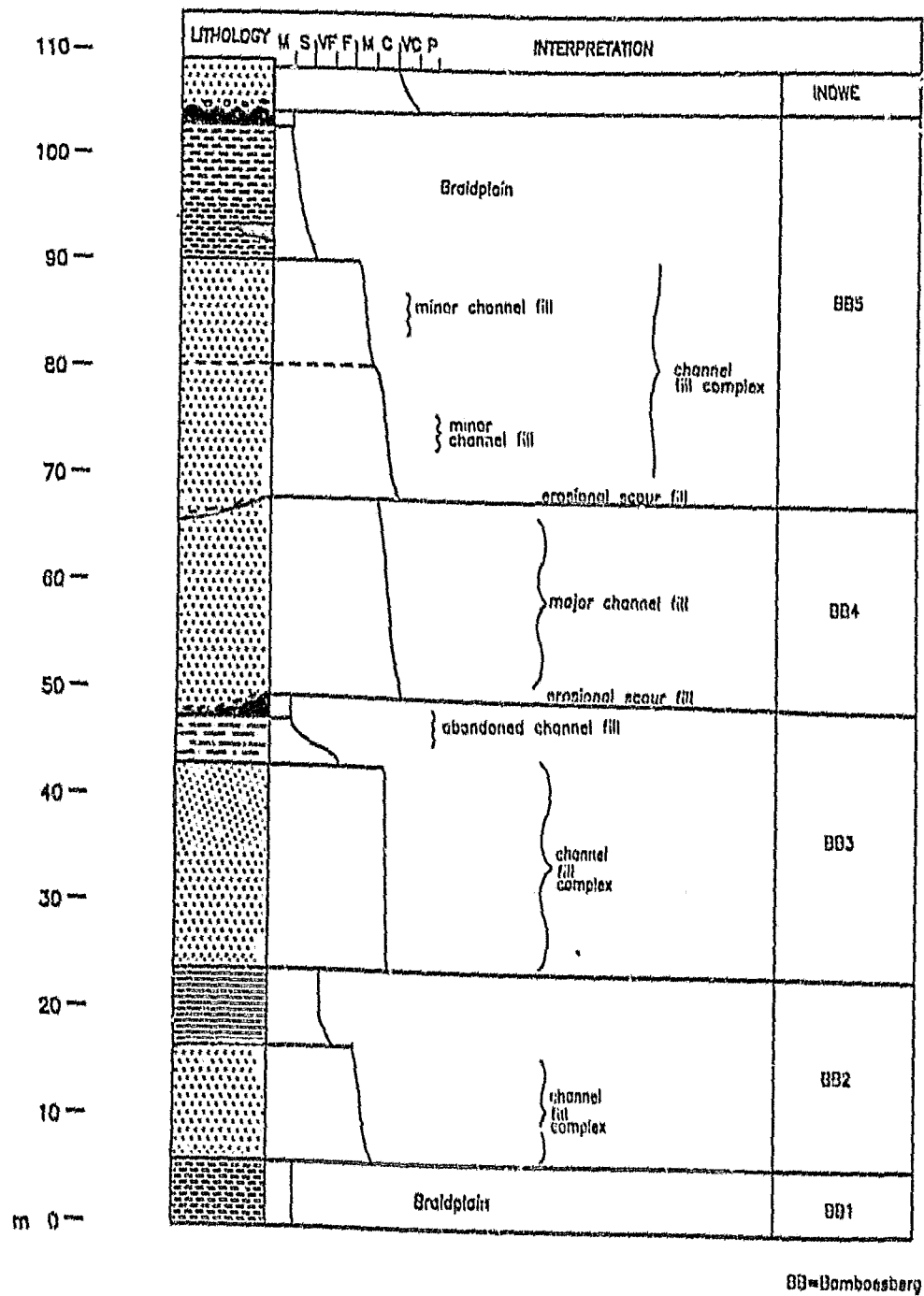


Figure 3.80: Log of borehole core SF/1/85 drilled to the west of the town of Molveno.

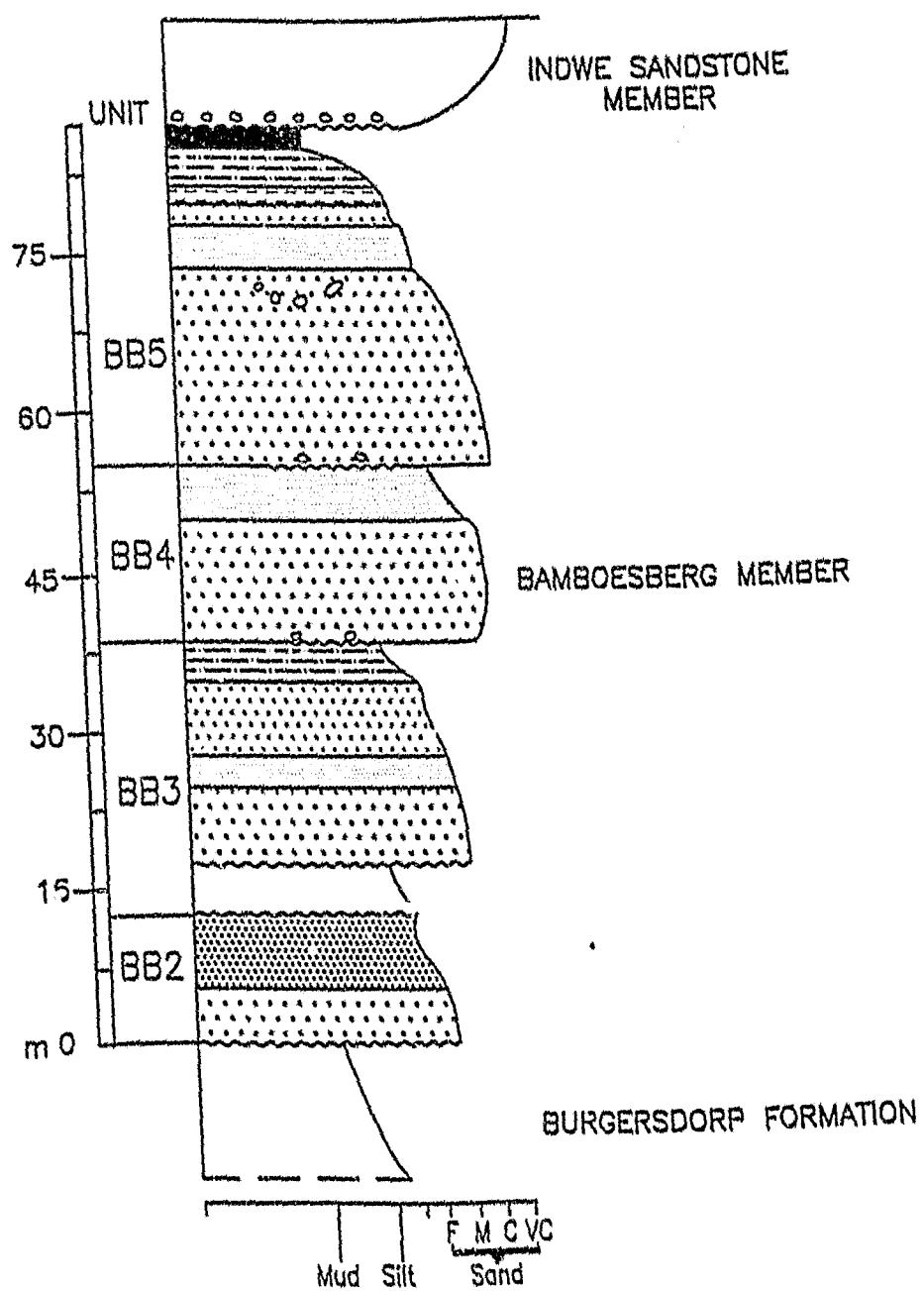
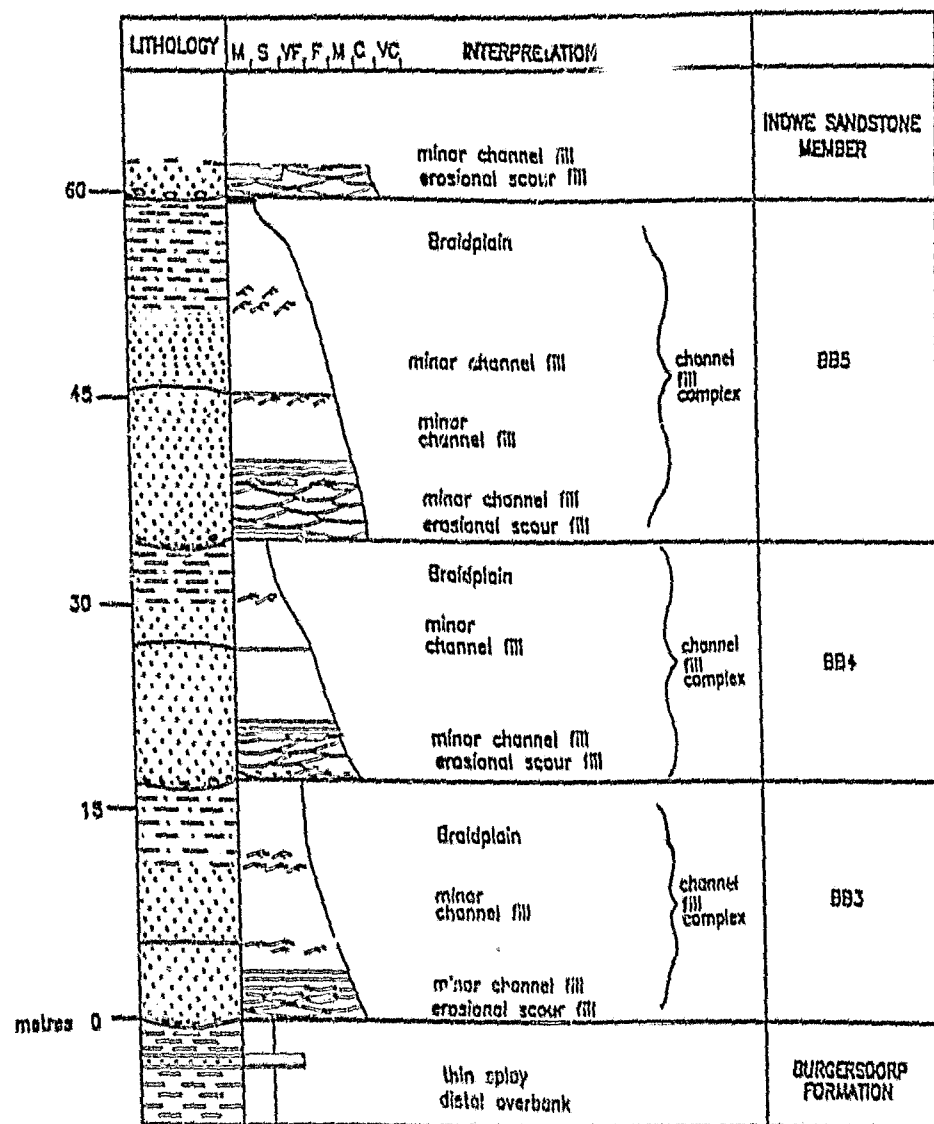


Figure 3.84: Stratigraphic section through the Bamboesberg Member at the stratotype in Grootdoringhoek Pass.



BB=Bamboesberg

Figure 3.87: Stratigraphic section through the Bamboesberg Member on the farm Hillside, Burgersdorp district.

Author Hancox P J

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