LIST OF PLATES

FIELD PHOTOGRAPHS

Plate 1. a & b. General views of the area.

Plate 2. a & b. Thinly layered sequence of metapelite and quartzite showing F3 folding.
   c. Coarse porphyroblasts of staurolite and kyanite on a S1 foliation plane of the metapelite.

Plate 3. a. Migmatite showing banding and pinch and swell structure of the vein rocks.
   b. Augens and lenses of quartz and/or feldspar in quartzo-feldspathic gneiss.
   c. An outcrop of metadolerite.

Plate 4. a. Discordant and concordant quartz veins.
   b. An outcrop of metapelite.
   c. Calcsilicate rock showing banding.

Plate 5-8. Closely oppressed, isoclinal, intrafolial F3 folds of similar nature showing ‘Z’ and ‘S’ senses from different parts of the major antiformal and synformal fold (F3) structures; characterised by the development of axial planar foliation (S1); refolding by open, asymmetric F5 folds can be seen in a few cases.

Plate 9. a & b. Quartz-sillimanite (muscovite) lenses in metapelites constituting L1.
   c. Similar to above but the lenses are of vein quartz and pegmatite.

Plate 10. Interference between F2 and F5 crenulations (=L2 and L5 lineations).

Plate 11. a. Mainly concentric to slightly similar F5 folds showing F4 interference.
   b. Open, asymmetric F5 with h-lineation (=L3); interference between S1 and S2 can be seen.
Plate 12.
a. Open, concentric, slightly asymmetric \( F_5 \) fold. 43

\[ e. \]

Plate 12.
b. Similar \( F_5 \) folds in metapelite-quartzite sequence. 43

\[ b. \]

Plate 12.
c. An overturned \( F_5 \) with mild \( F_4 \) interference. 43

\[ c. \]

Plate 15.
a. Asymmetric \( F_5 \) deforming \( L_1 \) lineation. 47

\[ a. \]

Plate 15.
b. \( F_5 \) folds in amphibolite, partly mimicked by vein quartz. 47

\[ b. \]

Plate 15.
c. Development of strain-slip cleavage \( (S_2) \) along the axial planes of \( F_5 \) folds. 47

\[ c. \]

Plate 15.

\[ b \& c. \] Tight, isoclinal \( F_5 \) folds of similar nature with a mild interference of \( F_4 \) folding. 47

\[ b \& c. \]

Plate 16.
a. \( F_4 \) crenulations with the development of \( S_5 \). 47

\[ a. \]

Plate 16.
b. A box-type conjugate \( F_5 \) with curvilinear axial traces due to \( F_4 \) interference. 47

\[ b. \]

Plate 16.
c. Isoclinal, overturned \( F_5 \) with \( F_4 \) interference. 47

\[ c. \]

Plate 17.
a. Tight, overturned \( F_5 \) with \( L_5 \). 76

\[ a. \]

Plate 17.
b. Overturned \( F_5 \) with axial plane fracture cleavage being refolded by \( F_4 \). 76

\[ b. \]

Plate 17.
c. A cross-section of \( F_5 \) and \( F_4 \) folds. 76

\[ c. \]

Plate 18.
a. Widely spaced joint planes in quartzite developed parallel to the axial planes \( (S_4) \) of \( F_5 \) folds. 76

\[ a. \]
b. Two sets of joints in quartzite.

c & d. Ptygmatic folding of quartz veins in metapelite-quartzite sequence.

HAND SPECIMEN PHOTOGRAPHS

Plate 19. a & b. Interference of \(L_2\) & \(L_3\) in metapelite.

c. En-echelon pattern of \(F_5\) in metapelite.

Plate 20. a. Interference of \(F_2\), \(F_3\) and \(F_4\) crenulations.

b. \(F_1\) mimicked by quartz-feldspar veins.

c. Interference of \(F_5\) and \(F_4\) crenulations.

Plate 21. a. \(F_5\) with mild refolding by \(F_4\).

b. Asymmetric \(F_3\) with a thickened shorter limb and a thinned longer limb.

c. Interference of \(F_5\) and \(F_4\) crenulations.

Plate 22. a. \(F_4\) folds with the development of strain-slip cleavage (\(S_3\)).

b & c. Quartz-tourmaline veins showing intricate \(F_5\) folding.

PHOTOMICROGRAPHS

Plate 25. \(S_3\) defined by micas and flattened quartz is folded by \(F_5\); the probable effect of \(F_4\) can be seen in a.

Plate 24. a. Open \(F_5\) showing an en-echelon tendency (conjugate) with some mica flakes parallel to the axial plane.

b & c. Similar to above; with strain-slip cleavage (\(S_2\)).

Plate 25. a. \(F_5\) showing a conjugate tendency with a micro-fracture along the shorter limb (whole slide projection photograph).
b. $F_3$ with a microfault.

c. Development of $S_3$ in metapelite.

Plate 26. 

a. Pre-$D_1$ garnet with straight inclusion ($S_1$) trails at different angles to $S_e$ ($S_1$).

b. Syn-$D_1$ garnet with sigmoidal Si showing anticlockwise sense of rotation.

c. Post-$D_1$ garnet truncating $S_1$

Plate 27. 

a. Syn-$D_1$ staurolite with curved inclusion trails.

b. Syn-$D_1$ kyanite developing from biotite.

c. Post-$D_1$ staurolite incorporating groundmass fabric.

Plate 28. 

a. Development of sillimanite from biotite.

b. Needles and narrow prisms of sillimanite.

c. Distorted fibrolite.

Plate 29. 

a. Low grade metapelite with slightly flattened quartz, oriented micas and magnetite crystals.

b. Lensoid group of quartz grains in low grade metapelite.

c. Metapelite showing alternate quartz-rich and mica-rich layers.

HAND SPECIMEN PHOTOGRAPHS

Plate 50. 

a. Idioblastic garnet porphyroblasts separated from metapelites.

b. Staurolite idioblasts showing well developed crystal forms and twin laws.

c. Kyanite crystals from metapelites.

Plate 51. 

a. Deflection of $S_1$ around garnet porphyroblasts.

b. Post-$D_1$ muscovite flake truncating $S_1$
A sillimanite muscovite group with relict kyanite.

Plate 52: a. Narrow, elongate mica flakes, oblique to $S_1$ (broad flakes), the former defining $S_2$ in metapelite.

b. $S_1$ defined by micas and needles of sillimanite in metapelite.

c. $F_3$ with axial planar kink band and strain-slip cleavage ($S_2$).

Plate 53: a. Development of $S_2$ along the shorter limb of $F_3$.

b. Folding of $S_1$ by $F_3$.

c. Conjugate $F_3$ in a well foliated metapelite.


b. $S_1$ in micaceous quartzite.

c. Intersection of $S_1$ and $S_2$ in micaceous quartzite.

Plate 55: a. Development of muscovite from biotite, both defining $S_1$ in quartzo-feldspathic gneiss.

b. Shearing along the grain boundaries of the minerals in quartzo-feldspathic gneiss.

c. Micas, sillimanite and flattened quartz defining $S_1$.

Plate 56. Shearing in quartzo-feldspathic gneiss.

Plate 57. Quartzo-feldspathic gneiss showing $S_1$, myrmekite and sericitisation of plagioclase.

Plate 58: a. A kink band in plagioclase with sericitisation along it.

b. Bending in banded ferruginous quartzite.

c. $F_3$ microfeld in banded ferruginous quartzite (whole slide projection photograph).

Plate 59: a. $S_1$ in quartz-hornblende-biotite schist.

b & c. Amphibolites showing hornblende, plagioclase, epidote and quartz.
Plate 40.

a. Post-D<sub>1</sub> garnet developing from hornblende.

b. Garnet with spiral inclusion pattern in calc-silicate rock.

c. Calc-silicate rock showing clinopyroxene, hornblende and garnet.

Plate 41.

a. Random orientation of anthophyllite.

b. A plate of anthophyllite with relic hornblende.

c. Hornblende showing poikiloblastic texture.

Plate 42.

a. Zoned plagioclase porphyroblast in amphibolite.

b. Development of epidote along the hornblende-plagioclase contact.

c. Anthophyllite-hornblende-plagioclase-quartz in two amphibole amphibolite.

Plate 43.

a. Reaction rims around olivine in metadolerite

b. Metadolerite showing sub-ophitic texture.

c. Euhedral laths of plagioclase showing clouding in metadolerite.

d. A zoned plagioclase porphyroblast and uralite rim around clinopyroxene in the above rock.

Plate 44.

Metanorite showing texture, clouding of plagioclase and uralitisation of pyroxene.

HAND SPECIMEN PHOTOGRAPHS

Plate 45.

a. Spherulitic growth of tourmaline.

b. Random orientation of anthophyllite plates.
PHOTOMICROGRAPHS

Plate 46. a. Pre-tectonic ($M_1$) garnet porphyroblast with straight inclusion trails.  

b. Syn-tectonic ($M_2$) garnet with sigmoidal trails of inclusions.  

c. Garnet porphyroblast showing syn-tectonic core (sigmoidal trails) and post-tectonic inclusion-free rim.  

Plate 47. a. Post-tectonic ($M_3$) garnet showing truncation of $S_1$.  

b. A part of a syn-tectonic ($M_2$) staurolite porphyroblast showing 'Z' sense Si.  

c. Syn-tectonic ($M_3$) staurolite with truncation and deflection of $S_1$ (=$S_1$).  

Plate 48. a. A part of a post-tectonic ($M_3$) staurolite porphyroblast with inclusions of quartz$_2$.  

b. Syn-tectonic ($M_3$) kyanite developing from biotite and defining $S_1$.  

c. A part of a post-tectonic ($M_3$) kyanite porphyroblast with inclusions of quartz$_2$.  

Plate 49. a. Syn-tectonic ($M_2$) hornblende defining $S_1$.  

b. Post-tectonic ($M_3$) hornblende incorporating groundmass fabric.  

c. Post-tectonic ($M_3$) clinopyroxene with inclusions similar to those of the groundmass fabric.  

Plate 50. a. Post-tectonic ($M_3$) anthophyllite with inclusions of groundmass quartz.  

b. Post-tectonic ($M_3$) muscovite truncating $S_1$.  

c. Post-tectonic ($M_3$) plagioclase porphyroblast with $S_1$ similar to groundmass.