

Mineralogy of 'Micaceous Material' in Samples of Pelitic  
Proterozoic and Lower Palaeozoic Rocks in Tasmania

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Abstract

X-ray diffraction analysis on crushed samples of fine grained micaceous rocks from the Burnie Formation and the Mathinna Beds indicates that the fine grained micaceous component is composed of  $2M_1$  muscovite and minor chlorite (var. penninite?).

METHODOLOGY

A sample of the Burnie Formation (Gee, 1968) from Wivenhoe [DQ106528] was crushed in a Siebtechnik mill for 2 seconds for material previously ground to 3 mm and up to 18 seconds for 10 mm sized fragments. A Mathinna Beds sample from Bellingham [EQ137600] required similar treatment but less crushing time in the mill.

The powder obtained was sieved and the  $<106 \mu\text{m}$  ( $<0.0043 \text{ in.}$ ) and  $106\text{-}150 \mu\text{m}$  ( $0.0043\text{-}0.0063 \text{ in.}$ ) fractions were retained. The coarser fraction of the Burnie Formation sample was analysed using the X-ray powder diffraction technique with a flat-bed recorder. The sample was placed on a glass slide wetted with acetone; adhesion was sufficient provided the material on the slide was a thin veneer.

The result indicated that there was insufficient micaceous material in the rock to allow characterisation of the types. Consequently, the fraction of interest was run through a glass column 19 mm in diameter and 1.2 m long, filled with distilled water. The material which remained in suspension the longest was kept and filtered, remounted onto a glass slide and X-rayed again. The results showed a very good enhancement of peaks and allowed identification of the micaceous components.

The analysis of the Mathinna Beds sample utilised the finest sieved fraction. Flocculation in the water column was partly prevented by the addition of concentrated ammonium hydroxide, but difficulty was encountered in preparing the glass slides due to flocculation in acetone. As a consequence, slide preparation was not as good as the previous sample and the trace pattern was not as well defined.

RESULTS

The three traces are shown in Figures 1-3. All the peaks can be accurately fitted to quartz and muscovite in the Burnie Formation sample (fig. 1). The whole rock sample from the Burnie Formation (fig. 2) has a  $14 \text{ \AA}$  line indicating the possible presence of small amounts of chlorite. The Mathinna Beds trace (fig. 3) is interpreted as a mixture of quartz, muscovite and chlorite. The muscovite in each sample is in the  $2M_1$  space group and the chlorite in the Mathinna beds is probably either clinochlore or penninite (100% line  $7.15 \text{ \AA}$ , no  $14 \text{ \AA}$  line).

CONCLUSIONS

The so-called micaceous material in the fine grained rocks analysed is  $2M_1$  muscovite. The specimens are representative of the sequences sampled, the Burnie Formation sample from Wivenhoe and the Mathinna Beds sample from Bellingham. Chlorite is usually identifiable optically and is

most probably detrital (E. Williams, pers.comm).

No conclusions can be made regarding the placement of these samples in a metamorphic facies zone.

#### REFERENCE

GEE, R. D. 1968. A revised stratigraphy for the Precambrian of north-west Tasmania *Pap.Proc.R.Soc.Tasm.* 102:7-10

[27 June 1978]

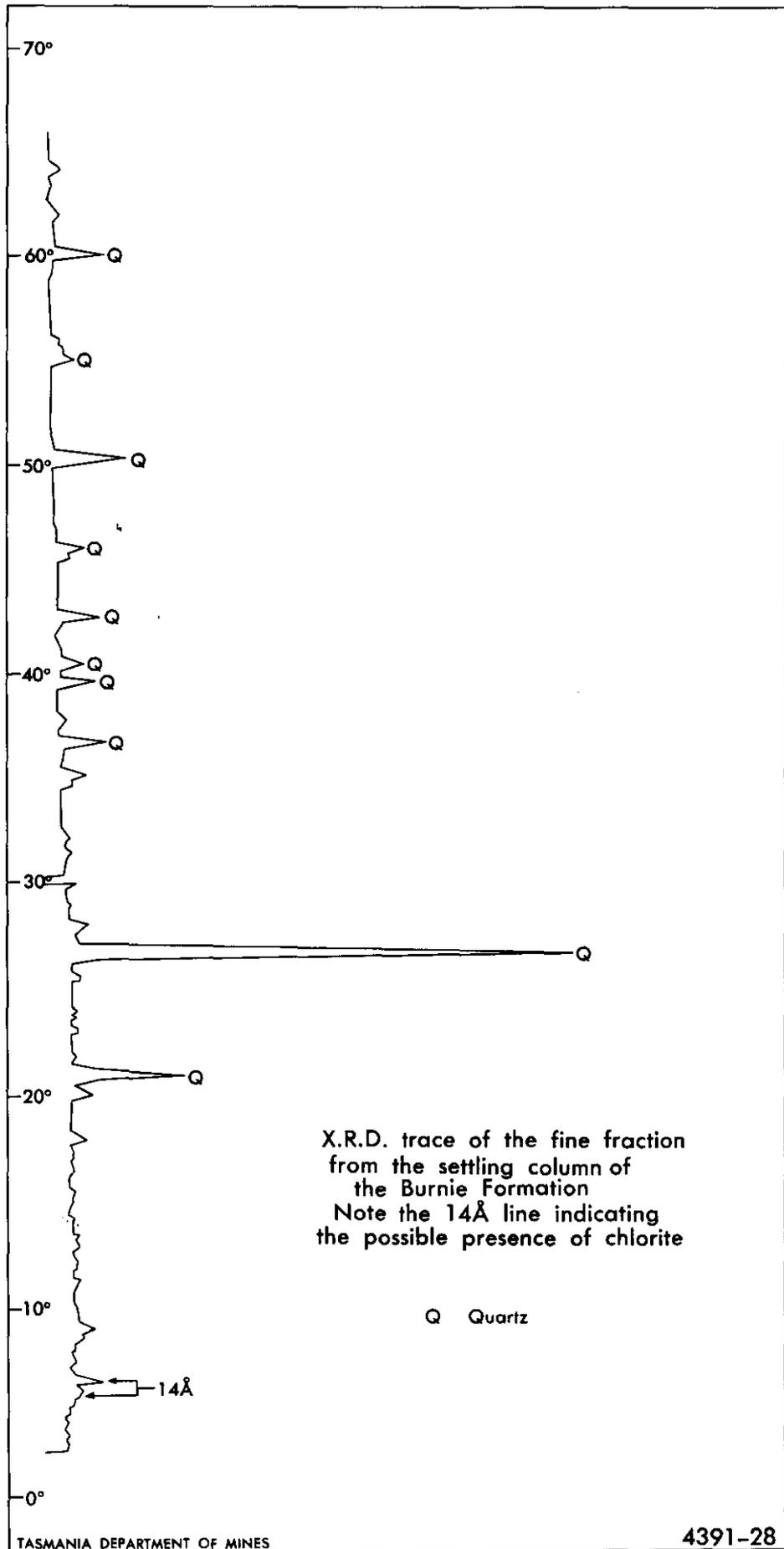


Figure 1

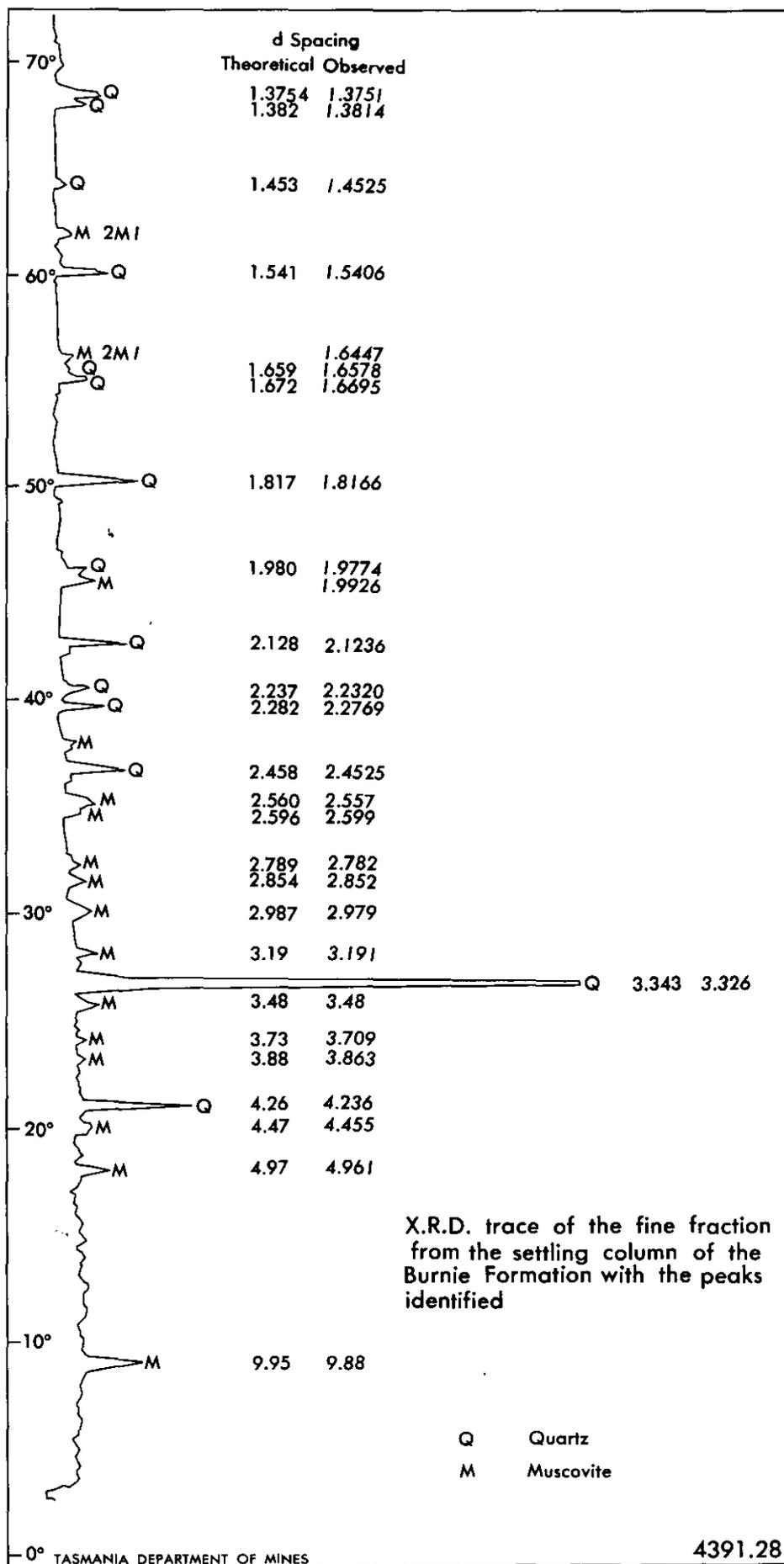


Figure 2

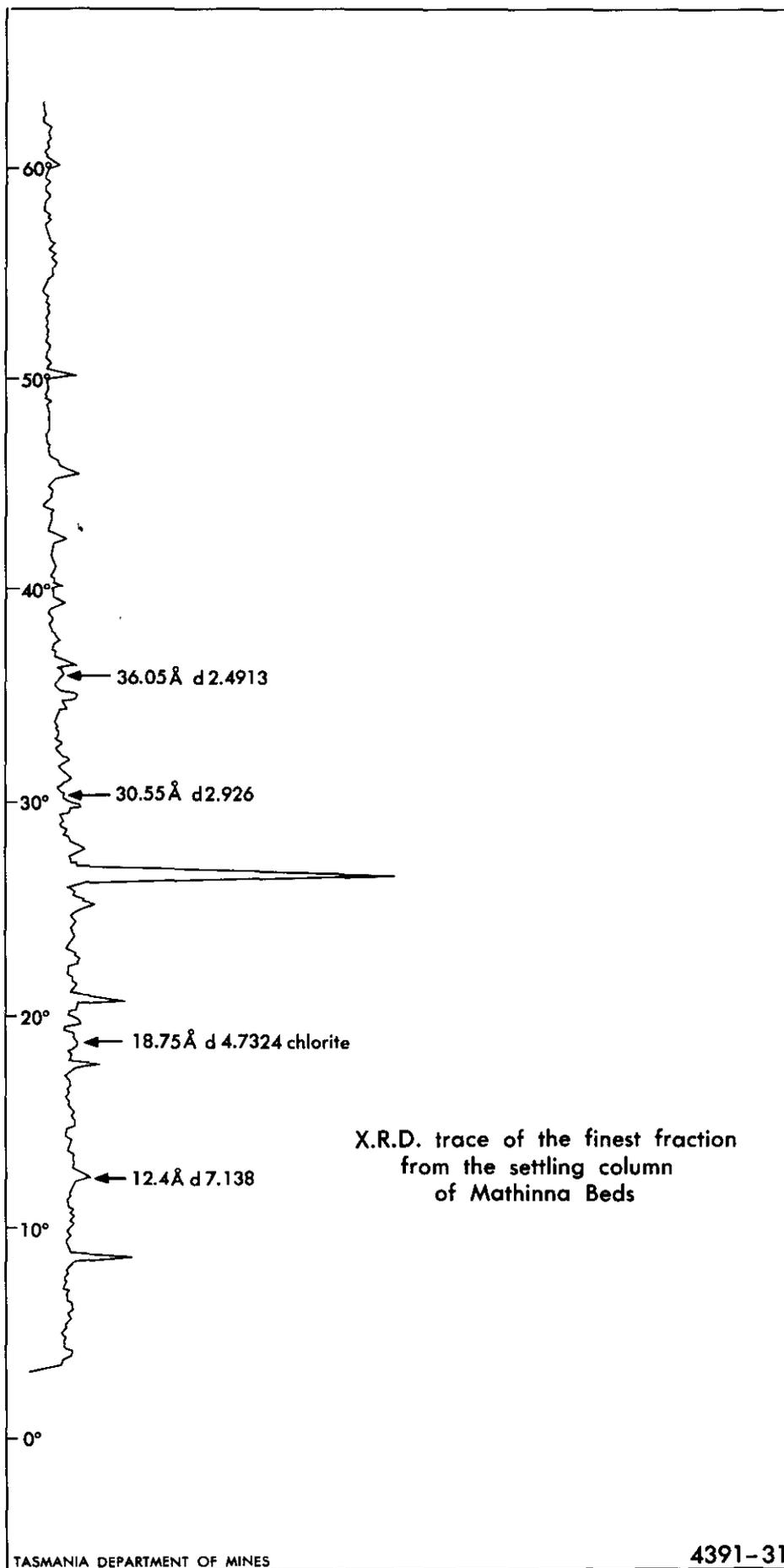


Figure 3