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THE USE OF THE INDWE SANDSTONE AS A STRATIGRAPHIC MARKER IN THE MOLTENO STAGE OF THE KARROO SYSTEM

by

B. R. Turner

In recent years it has become increasingly apparent that some of the early concepts of stratigraphic relationships in the Molteno Stage of the Karroo System are not wholly acceptable. Apart from the monotonously repetitive lithology, the lack of fossil data makes regional correlation difficult. Early attempts at correlation were based largely on the supposedly distinctive lithology of certain sandstone beds. The Indwe Sandstone, in particular, has received special attention and its general acceptance by stratigraphers as a lithostratigraphic marker of regional significance is now firmly entrenched in the literature. The name Indwe Sandstone was first applied by Du Toit (1903) to typical exposures around the village of Indwe. According to the original description it is the lowest coarse glittering sandstone in the succession and is "traceable throughout the region occupied by the group". He further states that: "it forms a reliable bench mark from which the horizons of the different coal outcrops can be defined". In practice, however, this does not always seem to be the case since the uppermost coal in the succession (the Molteno) has been correlated with the coal seam at Molteno and Cyphergat (Du Toit, 1954) which is now thought to be the equivalent of the Guba seam (Smits, 1966).

Truswell (1967) has pointed out that there are many inconsistencies in usage of South African stratigraphic terminology. The term Indwe Sandstone is a typical example in that it is a unit of informal status according to modern stratigraphic nomenclature; however, it has been used consistently in the sense of a formal stratigraphic unit and should be redefined and more strictly applied in accordance with the principles outlined in the American Code of Stratigraphic Nomenclature (1961).

The difficulty in using the Indwe Sandstone as a lithostratigraphic marker on the basis of Du Toit's (op. cit.) definition is shown by the fact that in the Burgersdorp area Van der Westhuizen (1948) places it at the top of the succession. Immediately to the north, in the Aliwal North District, however, the Indwe Sandstone lies at the base of the succession (Du Toit, 1912) whereas farther south in the type area around Indwe it is generally mapped as the first coarse gritty sandstone above the Indwe coal horizon (Ryan, 1963). In a written communication C. B. Coetzee (1966) states: "compilation of old maps" by the Geological Survey shows "quite clearly that the Indwe Sandstone did not mean precisely the same bed to the different geologists". The reason for the confusion in stratigraphic position of the Indwe Sandstone apparently arises from its failure to retain lateral distinction. This is not really surprising in view of the fact that the Indwe Sanstone at Indwe displays all the characteristics of a channel deposit in

which lateral variation is the rule rather than the exception. Consequently, the vertical lithological sequence (cyclic sequence) generally outranks lateral persistence in lithological character as an important correlation guide.

Around Aliwal North and Jamestown there are no coarse sandstone units that can logically be regarded as distinct lithic entities. Furthermore, since the lower sandstone at Aliwal North can be correlated with that in the Burgersdorp area (Turner, 1969) the Indwe Sandstone appears to be of limited use for correlation purposes and not of regional significance.

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