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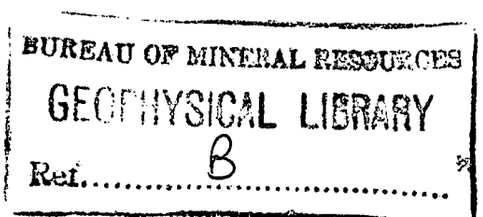

NEW TERTIARY UNITS, WESTERN QUEENSLAND.

by

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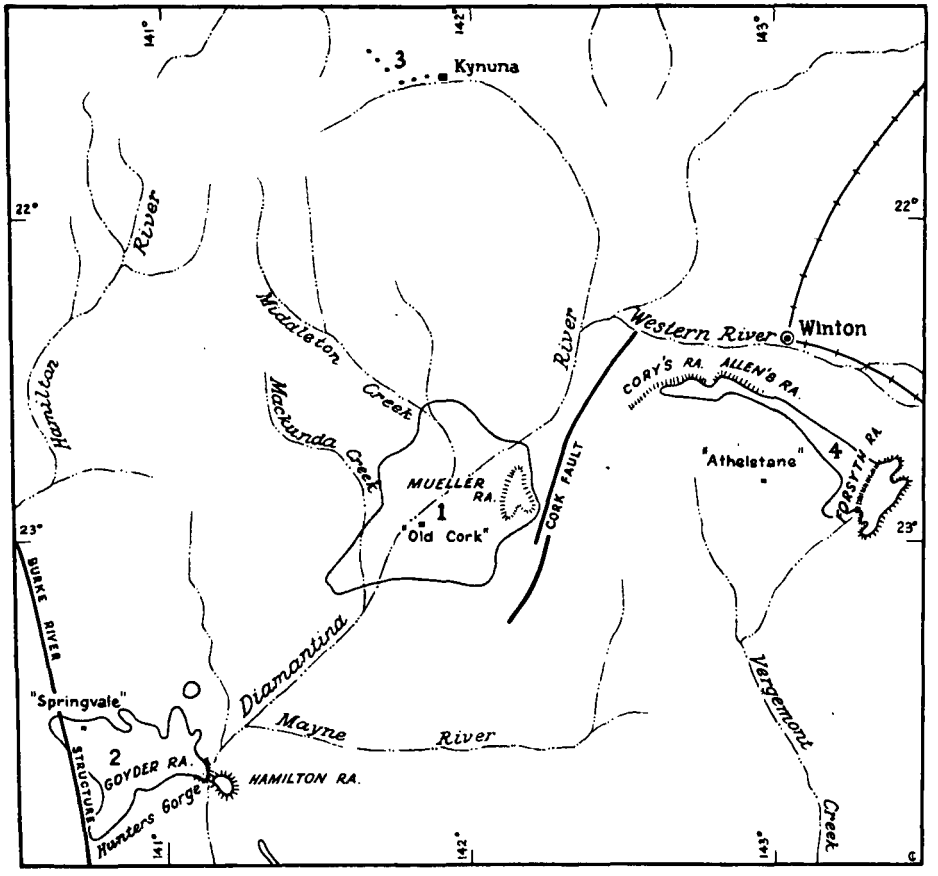
Preamble

During the course of regional geological mapping of the northern Eromanga Basin several new Tertiary units have been recognised and mapped; definitions are given in the unpublished Records on each field season's mapping (Jauncey, 1962; Vine & Jauncey, 1962, a, b; Vine, Casey & Johnson, in prep.). Some of the names have also been used in the first editions of the Brighton Downs, Mackunda, McKinlay and Julia Creek 1:250,000 Sheets at present in press. It is now proposed that the definitions be presented for publication in an appropriate geological journal in order to formalise the nomenclature and validate those names already in press. The paper for presentation forms the rest of this record.

Figure 1 LOCALITY MAP



1 *Old Cork Basin*
2 *Springvale Basin*
3 *Kynuna area*
4 *South of Winton*

Scale
20 10 0 20 40 MILES

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Tertiary sediments occur in western Queensland in several localized basins and belts of scattered outcrops. Some have already been described in detail by Paten (1964). This note records briefly new information on other occurrences, gained from the mapping of the northern Eromanga Basin by joint field parties of the Bureau of Mineral Resources and the Geological Survey of Queensland. The main purpose of this note is to provide definitions and formal nomenclature of the new units named during the mapping; full discussion of the Tertiary stratigraphy will be presented in a comprehensive report on the northern Eromanga Basin to be prepared on completion of the 1964 field mapping.

The areas described are shown on the sketch map, Fig.1. Successions in these areas are summarized in the following table, and proposed new names are in italics. All stratigraphic names have been approved by the Queensland Stratigraphic Nomenclature Sub-committee.

Springvale Basin	Old Cork Basin	Kyrnuna area	South of Winton
		Edkins Formation 0' - 23'	
	Mueller Sandstone 5' - 30'(?)		
Horse Creek Formation 0' - 40'			
	Old Cork Beds 0' - 350'(?)		Werite Beds 0' - 145' +
Springvale Formation 0' - 70'			
Moses Sandstone 0' - 60'			
Mackunda Beds and Winton Formation	Winton Formation	Winton Formation	Winton Formation

SPRINGVALE BASIN

Paten (1964) defined and described the freshwater Springvale Basin and recorded from it two units: the Springvale Formation, and the overlying and overlapping Horse Creek Formation. The eastern extremity of the Basin within the Brighton Downs 1:250,000 Sheet area was mapped mainly by photo-interpretation. During the subsequent surface mapping of the Brighton Downs area Jauncey (1962) showed that an arenaceous unit resting unconformably on the Winton Formation is overlain unconformably by the Springvale and Horse Creek Formations. This unit - the Moses Sandstone - appears to be a fairly local fluviatile deposit and probably represents a prelude to the formation of the Springvale Basin.

Moses Sandstone

Derivation : From Moses Cone, a small conical hill 1 mile south-west of Hunters Gorge on the Diamantina River, about 150 miles south-west of Winton.

Type Section : In the western scarp face of the Goyder Range, 2 miles NNW of Hunters Gorge, at Lat. 23°40'S, Long. 141°06'E.

Distribution : The Hamilton and Goyder Ranges (Fig.1), and as isolated outliers extending up to 20 miles north and south of Hunters Gorge.

Lithology : Fine grained sandstone, in part calcareous, but mainly strongly silicified by weathering; sandy ironstone at the base.

Thickness : 60 feet in the type section, which appears to be the thickest exposure.

Structure : Mainly horizontal, but with local warping which produced dips up to 2° in the Goyder Range and 8° in the southernmost outcrop.

Fossils & Age : No fossils found. The Moses Sandstone was deposited on the Winton Formation after a prolonged period of erosion. Although unconformably overlain by the Tertiary Springvale and Horse Creek Formations the degree of weathering and dissection suggests a Tertiary age.

OLD CORK BASIN (new name)

Downwarping, associated with movements on the Cork Fault (Fig.1), resulted in ponding of the ancestral Diamantina River and the development of a small freshwater sedimentary basin, here named the Old Cork Basin. Sediments deposited in this basin now occupy a roughly circular area, with a radius of approximately 20 miles and centred near Old Cork Homestead, from which the name is taken. The present extent of the basin probably approximates the original extent.

Two fluviatile and lacustrine units were recognized within the basin, namely: the Old Cork Beds, which rest unconformably upon the Winton Formation, and the Mueller Sandstone, which rests unconformably upon the Old Cork Beds. The Old Cork Beds are very similar to the suite of sediments in the Springvale Basin, but it is unlikely that the two basins ever became a single depositional area. However, the similarities suggest that sedimentation in these basins followed a similar pattern, possibly resulting from contemporaneous movements on two major structures: the Cork Fault and the Burke River Structure. In the Springvale Basin unconformities occur between the Moses Sandstone and the Springvale Formation, (Jauncey, 1962), and between the Springvale and Horse Creek Formations (Paten, 1964); in the Old Cork Basin more detailed mapping would be necessary to determine whether lithological variations are due to unconformities or merely to facies changes.

Old Cork Beds

Derivation & Type Locality : Old Cork Homestead, on the Diamantina River, 80 miles south-west of Winton, at Lat. 22°55'S, Long. 141°52'E; the homestead is sited on a silicified limestone bed within the unit.

Distribution : Throughout the Old Cork Basin (Fig.1).

Lithology : Predominantly grey mudstone and white limestone, but on the western side of the Diamantina River there is local development of sandy siltstone, silty sandstone, calcareous sandstone, and with some algal(?) beds. Many of the exposures are strongly silicified to form a duricrust.

Thickness : Thickest exposures are in the western face of the Mueller Range, where about 80 feet of the unit crops out below the Mueller Sandstone. In the plain to the west of the Mueller Range at a

Thickness : (cont.) slightly lower level than the base of the Range, Cork No.23 Bore intersected 255 feet of 'shale' and 'limestone' (driller's terms) interpreted as Old Cork Beds; this is probably the deepest part of the Basin.

Structure : Mainly horizontal, but very gently folded near the Cork Fault.

Fossils & Age : One species of cyprid ostracode, the gastropod Planorbis sp. (both freshwater forms), and algae(?); the forms are not sufficiently diagnostic to date the unit (P.J. Jones, unpubl.); the ostracode is one of two species previously found in the Horse Creek Formation of the Springvale Basin. The Old Cork Beds are regarded as Tertiary in age because they were deposited on the Cretaceous Winton Formation after a prolonged period of erosion, and are are strongly leached and silicified, and deeply dissected.

Mueller Sandstone

Derivation : From Mueller Range, a plateau east of the Diamantina River, about 60 miles south-west of Winton.

Type Section : In the western face of the Mueller Range, ¼ mile south-east of Top Knot Tank of Red Hill Station, at Lat. 22°50'S, Long. 142°10'E.

Distribution : Capping the Mueller Range (Fig.1).

Lithology : Predominantly illsorted (pebbly and silty) sandstone, but grading into pebble conglomerate in the south-east near the Cork Fault. Most exposures are strongly weathered.

Thickness : 12 feet in the type section, between 5 and 12 feet over most of the Mueller Range, thickening to an estimated 30 feet in the south-east of the outcrop area near the Cork Fault.

Structure : Mainly horizontal, slightly warped near Cork Fault.

Fossils & Age : No fossils found. The Mueller Sandstone was deposited unconformably upon the Old Cork Beds, but the amount and period of erosion were probably small. The degree of weathering and dissection suggest a Tertiary age.

KYNUNA AREA

Fluviatile sediments resting unconformably upon the Winton Formation are preserved as a few small erosional residuals forming isolated hill cappings west of Kynuna (Fig.1). These sediments are here named the Edkins Formation. The residuals are now roughly aligned west-north-west, which suggests that they may represent the original course of a tributary of the ancestral Diamantina River.

Edkins Formation

Derivation : From Mt Edkins, a prominent flat-topped hill, 3 miles west of Kynuna.

Type Section : In the top part of a small unnamed hill 1 mile west of Kynuna at Lat. 21°35'S, Long. 141°52'E.

Distribution : Capping a string of flat-topped hills north of the Diamantina River and extending from the type section to 16 miles WNW of Kynuna.

Lithology : White and red, interlaminated quartz sandstone and siltstone, with thin beds of pebble and fine conglomerate; cross-laminated and cross-bedded. Sandy siltstone predominates in the upper half of the sequence. The unit is usually strongly silicified at the surface to form a duricrust.

Thickness : 23 feet in the type section, mainly less than 15 feet in the erosional residuals to the west.

Structure : Apparently horizontal.

Fossils & Age : No fossils found. The unit was deposited on the Winton Formation after a prolonged period of erosion. The degree of weathering and dissection suggests a Tertiary age.

SOUTH OF WINTON

A sequence of fluviatile and lacustrine sediments rests unconformably upon an eroded laterite profile on the Winton Formation south of Winton. In places there appears to be more than one unit, separated by minor erosional breaks within the sequence; detailed subdivision has not been attempted and the sediments are here collectively named the Werite Beds. Although resting on an eroded laterite profile the upper part of the Werite Beds is also strongly leached and silicified to form a duricrust and the unit forms hills or hill cappings.

Werite Beds (pronounced wereety)

Derivation : From Werite Holding, between 30 and 40 miles south of Winton.

Type section : In the northern face of the Forsyth Range (Fig.1), 11 miles east of Athelstane Homestead, at Lat. 22° 49'S, Long.143°07'E.

Distribution : Forming the Forsyth Range and capping lower hills to the north-west, also capping Allen's Range and the eastern part of Cory's Range (Fig.1). The south-western extension from these outcrops is concealed by Quaternary superficial deposits.

Lithology : In the Forsyth Range mainly grey mudstone, but with thin beds of white quartz sandstone near the base. To the north-west, in the Allen's and Cory's Ranges, silty sandstone is the dominant lithology with local development of conglomeratic sandstone, quartz sandstone and mudstone. Commonly strongly leached and silicified.

Thickness : 145 feet (base not exposed) in the type section, which is probably the thickest sequence.

Fossils & Age : No fossils found. The Werite Beds are regarded as Tertiary in age because they were deposited on the Winton Formation after a prolonged period of erosion, and subsequent lateritization, but are themselves strongly leached and silicified, and deeply dissected.

REFERENCES

JAUNCEY, W., 1962 - Explanatory notes, Brighton Downs Sheet, Queensland. Bur.Min.Res.Aust.Rec. 1962/79 (unpubl.)

PATEN, R.J., 1964 - The Tertiary geology of the Boulia region, western Queensland. Bur.Min.Res.Aust.Rept 77

(Additional references in preamble only - not for publication.)

VINE, R.R., 1962 - Explanatory notes, Mackunda Sheet, Queensland. Bur.Min.Res.Aust.Rec. 1962/70 (unpubl.)

VINE, R.R. & JAUNCEY, W., 1962a - Explanatory notes, McKinlay Sheet, Queensland. Bur.Min.Res.Aust.Rec. 1962/80 (unpubl.)

VINE, R.R. & JAUNCEY, W., 1962b - Explanatory notes, Julia Creek Sheet, Queensland. Bur.Min.Res.Aust.Rec. 1962/81 (unpubl.)

VINE, R.R., CASEY, D.J., & JOHNSON, N.E.A., (in prep.) - Progress report on the geology of part of the northern Eromanga Basin, 1963. Bur.Min.Res.Aust.Rec. 1964/