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DEPARTMENT OF NATIONAL DEVELOPMENT.
BUREAU OF MINERAL RESOURCES
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THE GEOLOGY OF THE BIRDSVILLE 4-MILE SHEET AREA,
QUEENSLAND.

by

F.Olgers.

The informaton contained in this report has been obtained by the Department of National Development, as part of the policy of the Commonwealth Government, to assist in the exploration and development of mineral resources. It may not be published in any form or used in a company prospectus without the permission in writing of the Director, Bureau of Mineral Resources, Geology and Geophysics.

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SUMMARY

The mapping of the Birdsville 4-mile Sheet area and examination of water bore logs established a sequence of at least 3,000 feet of Mesozoic sediments, unconformably overlain by Tertiary rocks which have a maximum thickness of 100 feet. The Mesozoic rocks form the main aquifer and the impermeable cap in the western portion of the Great Artesian Basin.

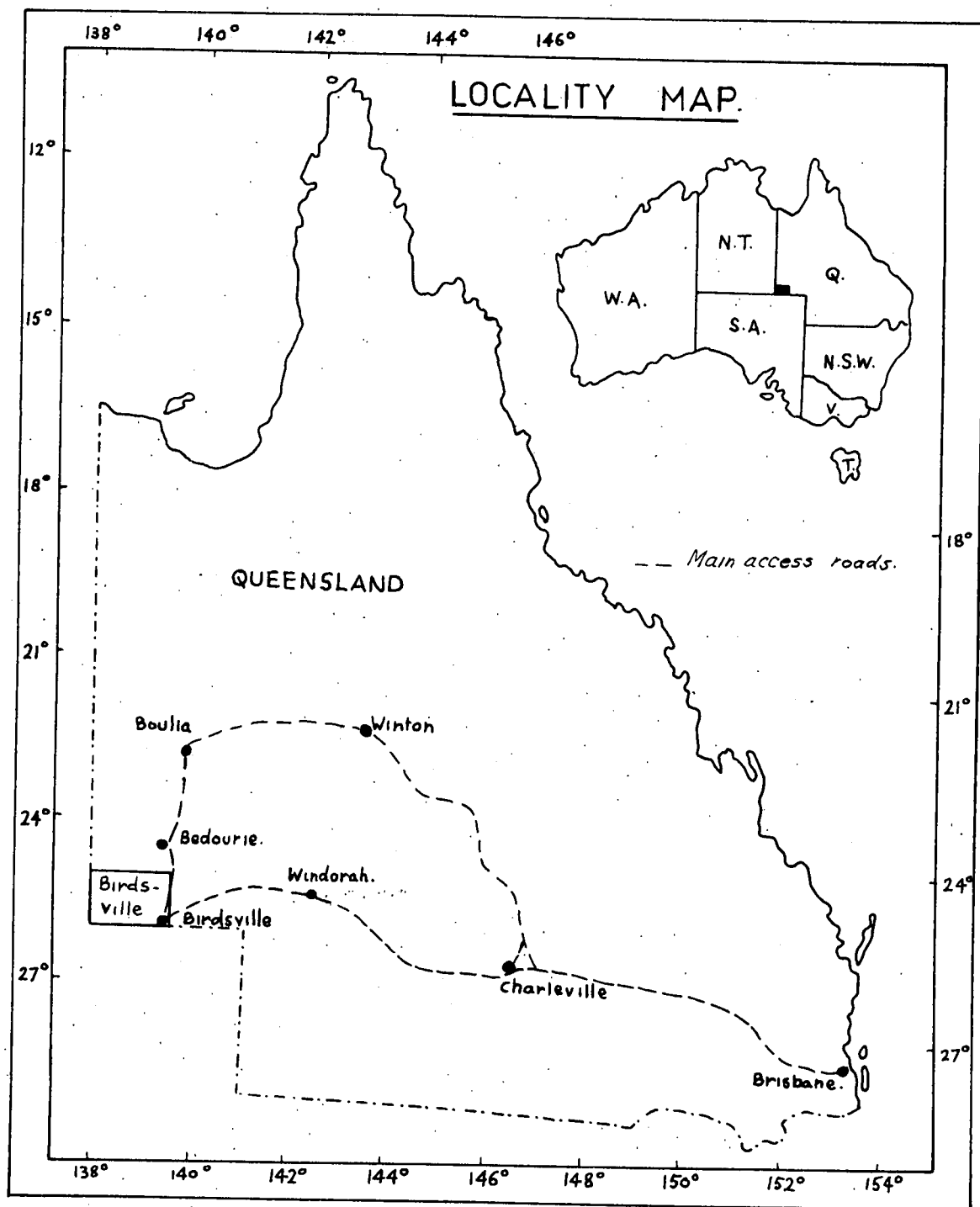
The marine shales of the Wilgunya Formation are possible source rocks for petroleum. Source rocks occur in the Lower Palaeozoic sequence to the north, in the Boulia 4-mile area.

The only known reservoir rocks are the sandstones of the Lower Cretaceous Longsight Sandstone.

Neither oil nor gas has been reported from any of the water bores in the area. Showings were encountered in the Bedourie Bore, 120 miles north of Birdsville, and in the Delhi Frome Santos Betoota No. 1 Well, 100 miles east of Birdsville.

No important structures or economic mineral deposits are present in the area.

Figure 1.



INTRODUCTION

The Birdsville 4-mile Sheet area in the far south-western corner of Queensland is between latitudes 25° and 26° South and longitudes 138° and $139^{\circ} 30'$ East. The township of Birdsville with a population of about 50, lies in the south-eastern corner of the sheet area.

Mapping of the Birdsville area was carried out in 1960 as part of the regional mapping of the western part of the Great Artesian Basin. The geology was plotted on aerial photographs taken by "Adastra" in 1958 with a scale of 1:50,000.

Adria Downs and portions of Glengyle and Roseberth cattle stations occur in the area. The country supports 1-3 head per square mile depending on the rainfall.

The Birdsville area has a dry climate with warm to hot days (average summer temperature of 85°F. , average winter temperature of 55°F.) and cool to cold nights for most of the year. The average annual rainfall is 5 inches which is received mainly during the summer months. The annual rainfall variations are large, and droughts are common. The Birdsville area lies too far inland to benefit from rains associated either with the south-east trades or north-west monsoon winds, and the bulk of the precipitation is obtained from thunderstorms. In winter months, cold southerly winds often cause dust and sand storms.

The western half of the sheet area is covered by the sand ridges of the Simpson Desert; gently undulating gibber, gravel and soil plains occupy the remainder of the 4-mile area.

The vegetation is everywhere very sparse. Grass occurs on the plains, spinifex in places on the sand ridges, and trees are confined to creek beds. Eucalyptus trees are abundant along the Diamantina River, which runs through the south-eastern corner of the area.

All roads in the area are soil tracks and impassible during wet periods.

Potable water is available from artesian and sub-artesian bores and permanent water holes in the Diamantina River and Eyre Creek. Stock water is also obtainable from earth tanks and dams.

The Birdsville area forms part of Authority to Prospect Nos. 66P and 67P, Queensland, held by Santos Ltd., and Delhi Australian Petroleum Ltd.

The Birdsville area, as well as the adjoining 4-mile Sheet areas has not received much attention until recently when the search for oil in the Great Artesian Basin extended to this area. No detailed geological work has been done before, but many regional surveys covered the whole or part of the area. The most important of these are: Daintree (1872), Jack and Etheridge (1892), Whitehouse (1930, 1940, 1941, 1945, 1948 and 1954), Madigan (1929, 1936, 1938 and 1945) and Sprigg (1958). Casey, Reynolds, Dow, Pritchard, Vine and Paten (1960) and Reynolds (1960) contributed to the geological knowledge of the area in general. Gravity surveys by the Geophysical Section of the Bureau of Mineral Resources were made in the western part of the Great Artesian Basin from 1957-1959. Surveyors of the Department of Interior traversed the area in 1960 and a seismic survey by the South Australian Mines Department was carried out in south-western Queensland and northern South Australia in that same year (Milton and Seedsman, 1961). Geosurveys of Australia Ltd. prepared a photo-interpretation map of the area in 1959.

PHYSIOGRAPHY

Physiographically, the area may be divided into two regions:

- i) the sand dune country in the west,
- ii) the level to gently undulating plain country, with scattered mesas and buttes, in the east.

The sand dune country covers about 60% of the Birdsville area. The dunes trend in a N.N.W.-S.E.E. direction and attain great lengths with an average height of 40 feet; they are usually steepest on their eastern sides. The distance between adjacent dunes averages a quarter of a mile. The areas between them are occupied by clay-pans and sand drifts. The dunes have a reddish colour due to the ferric oxide coating of the sand grains. The vegetation on and between the dunes is very sparse, spinifex and low shrubs being the most abundant.

The plain country in the eastern portion of the sheet area is gently undulating and in many places covered by gibbers. Some buttes are present which have cappings of hard siliceous rocks.

The main rivers of the area are the Diamantina and Mulligan. The Mulligan runs in a N.N.W.-S.S.E. direction through the western region. The river has no significant tributaries in the Birdsville area and rarely flows. The Diamantina River runs through the south-east corner of the sheet area; it is an intermittent stream which only flows during the summer when heavy monsoonal rains fall in the catchment area 300 miles to the north-east of Birdsville.

Waterholes occur in both river beds; one in the Diamantina River east of Birdsville is used for the water supply of the town. The water is dirty and a hole was drilled in Birdsville in 1961 to obtain artesian water for the town's use.

TABLE I

STRATIGRAPHY OF THE BIRDSVILLE 4-MILE SHEET

ERA	PERIOD	FORMATION AND SYMBOL	LITHOLOGY	MAX. THICKNESS	OCCURRENCE	CORRELATION	TOPOGRAPHIC EXPRESSION
Cainozoic	Quaternary	Cza, Czs, Czg, Czi.	Alluvium, sand, gibbers, iron- stone.	65'+, 50', 9", 2"	outcrop		Alluvial flats, sand-lunes, gibber plains and ironstone "patches".
	Tertiary	Unit equivalent to Austral Downs Limestone (Ta)	Silicified limestone (chalcedony)	10'	outcrop		Mostly as gibbers on the plains.
		Marion Formation (Tm)	Conglomeratic sandstone and siltstone	5'	outcrop	Eyrian Series (Woolnough and David, 1926)	Tops of hills and scarps and as gibbers on the plains.
Mesozoic	Upper (?) - Cretaceous	Winton Formation (KU?W)	Arkose and claystone (partly silicified)	500' (?)	outcrop		Plains and areas of moderate relief
	Lower -	Wilgunya Formation (Klw)	Mainly dark shales	2800' (?)	In Adria Downs bore.	Tambo and Rona Formations (Whitehouse, 1926).	No outcrop
	Cretaceous	Sandy unit equivalent to the Longsight Sandstone (Kll)	Sandstone and sandy shale	20'+	In Adria Downs bore	Upper part of the Blythesdale Group (Jack 1895)	No outcrop

STRATIGRAPHY

The stratigraphy of the area has been summarized in Table I page 3a. The units will be dealt with separately in the following paragraphs.

Sandy unit equivalent to the Longsight Sandstone.

Adria Downs bore, 34 miles north-west of Birdsville, is the only deep hole in the Birdsville area. The bore penetrated 3090 feet of mainly Mesozoic sediments. The artesian supply was struck at 3080 feet below the surface. The aquifer, which consists of sandy shale and sandstone has been correlated with the Lower Cretaceous Longsight Sandstone, which crops out in the Boulia and Mt. Whelan 4-mile Sheet areas on the edge of the Great Artesian Basin, and forms the main aquifer in south-western Queensland. The formation was named by Casey (1959) after Longsight Peak ($22^{\circ} 30'$ S., $139^{\circ} 31'$ E.) in the Boulia 4-mile area. The type localities are at Longsight Peak and on the south side of Eastern Creek ($22^{\circ} 17'$ S., $140^{\circ} 17'$ E.). A full description of the unit has been given by Casey et al. (1960). The formation is conformably overlain by the Wilgunya Formation.

Wilgunya Formation

The formation was named by Casey (1959) after Wilgunya Creek, a tributary of the Hamilton River in the Boulia area. The type area of the formation is 8 miles to the north-east of Dover Homestead at $22^{\circ} 32'$ S., $140^{\circ} 50'$ E. The formation has been fully described by Casey et al. (1959) and Reynolds (1960). The macro-fauna has been listed by Dickins (1960) and Crespin (1960) identified the microfossils.

The fauna includes Aucellina hughendenensis, Inoceramus (mainly as fragments), the belemnite Dimitobelus, rare radiolaria, and foraminifera, the most important of which is Globigerina planispira.

The Wilgunya Formation does not crop out in the Birdsville area. The exact thickness of the formation can not be determined from the log of Adria Downs bore, as the lithology of the Wilgunya Formation is very similar to that of the overlying Winton Formation, but the estimated thickness of the formation is 2800 feet in the Birdsville area. The formation consists mainly of dark shale, and is conformably overlain by generally coarser clastics of the Winton Formation; the beds are marine, Lower Cretaceous.

Winton Formation.

Dunstan (1916) used the name "Winton Series" for Cretaceous rocks in the Winton District, Central Queensland. Whitehouse (1930) placed the "Winton Series" conformably above the "Tambo Series"; in 1953 he used the name Winton Formation, and in 1954 placed it in the Rolling Downs Group.

The Winton Formation crops out in the eastern regions of the 4-mile area where it forms gently undulating plain country. The dominant lithology is arkose; interbedded clays and sands are present; ironstone occurs as nodules and as thin bands. Deep leaching and silicification, probably associated with lateritization, have taken place. On weathering, the rocks break up into small blocky fragments. Ironstone gravel covers the surface in many places, giving rise to the characteristic photo pattern of the formation. The Winton Formation conformably overlies the Wilgunya Formation and is, in places, conformably overlain by Tertiary deposits. The formation is a lacustrine deposit; its thickness can not be determined from the Adria Downs bore log because of the similarity of the strata to the underlying Wilgunya Formation. The estimated thickness in the Birdsville area is about 500 feet. The maximum thickness measured in outcrop is 70 feet.

Marion Formation

The formation was named by Casey (1959) after Marion Downs Homestead, 40 miles south-south-west of Boulia on the Boulia-Bedourie road. The type area is 14 miles west of the homestead; the reference section is 5 miles north-west of Strathelbiss Station, 14 miles north of Boulia ($22^{\circ} 14' \text{ S.}$, $139^{\circ} 47' \text{ E.}$)

The Marion Formation has a wide distribution in the eastern part of the Birdsville 4-mile area, where it occurs as cappings on mesas and as gibbers on the extensive gently undulating plains. The formation consists of fine-grained sandstone and conglomeratic sandstone and siltstone, in most cases silicified. On weathering they break up into boulders which cover the plains to form the well known gibber plains of western Queensland. The relief of the country is very small and the distribution of the gibbers can be taken almost as representing the extent to which the Marion Formation was laid down over the Winton Formation in the Birdsville area.

In places, the formation is unconformably overlain by Tertiary limestone deposits. Wind blown sand of the Simpson Desert obscures the western margin of the formation.

The marion Formation is only a few feet (up to 5) thick in the Birdsville area; it is considered to be a fesh water and probably in part aeolian deposit (Casey et al., 1960). A possible Tertiary age has been assigned to the unit but apart from fossil wood found elsewhere, it is unfossiliferous; it may be related to the Eyrian Series of South Australia.

Unit equivalent to the Austral Downs Limestone.

The Austral Downs Limestone was named by Noakes and Traves (1954) after Austral Downs Homestead in the Urandangi 4-mile Sheet area. The type localities are in the Georgina Valley at Austral Downs ($20^{\circ} 13' \text{ S.}$, $137^{\circ} 46' \text{ E.}$) and Urandangi ($21^{\circ} 40' \text{ S.}$, $138^{\circ} 16' \text{ E.}$) homesteads.

Whitehouse (1940) described "bars" of the limestone in the Birdsville area, and considered them to be surface soil limestones which accumulated in a warm, semi-arid to arid period between two periods of high rainfall.

The main occurrences of the unit are in and to the north of Listore Creek and they continue into the Bedourie area to the north, near the eastern edge of the sheet area and extending eastward toward Cacoory Ruins in the Betoota 4-mile area, and along Ichica Creek near the ruins of Roseberth Station and north-west and south-east of this locality. The formation occurs in elongated outcrops which, except the one at Cacoory, occupy topographically low positions between raises of Marion Formation. Thin section examination has shown that algae are present in the limestone from Cacoory.

The limestones in the Birdsville area, because of their appearance, have been related to the Austral Downs Limestone. The unit is thought to be of lacustrine origin and reaches a thickness of approximately 10 feet in the Birdsville area. Paten (1960) suggested a late Tertiary or early Quaternary age for the formation.

Quaternary deposits.

At least 65 feet of alluvium was recorded in shot holes drilled by the South Australian Mines Department along the Diamantina River. The deposit consists mainly of clay and sandy clay.

The wind-blown sand of the Simpson Desert covers the western half of the 4-mile Sheet area. The sand occurs in N.N.W.-S.S.E. trending sand ridges; they have a reddish colour due to the ferric oxide coatings of the sand grains.

Gibber plains are widespread in the area. The gibbers are formed by the weathering of the Tertiary Marion Formation; they consist of silicified conglomeratic sandstone and measure up to 9 inches in diameter. The gibbers, which have a dark brown colour due to iron oxide coatings, are highly

polished and extremely resistant against weathering.

GEOLOGICAL HISTORY

The oldest rocks encountered in bores in the Birdsville area are the sandstones, with some shales and sandy shales of the Lower Cretaceous Longsight Sandstone equivalent. These rocks were laid down in a shallow water environment, with conditions changing from freshwater to marine.

During the Lower Cretaceous, these sandy beds were covered by the marine shales and siltstones of the Wilgunya Formation. Sedimentation took place first in a transgressing and later in a regressing sea.

Probably towards the end of the Cretaceous Period, the inland sea lost its connection with the open sea, and a lake formed in which the claystones and arkoses of the Upper (?) Cretaceous Winton Formation were laid down.

Erosion followed the deposition of the Winton Formation and on the eroded surface Tertiary sandstones of the Marion Formation were then laid down in a north-south belt through the middle of the Birdsville 4-mile Sheet area. The formation is considered to be a freshwater and in part aeolian deposit.

Sedimentation was followed by lateritization and silicification, which brought about changes in textures and compositions; although the Marion Formation was most effected, all outcropping rocks were effected to some degree.

Late Tertiary or early Quaternary (Paten, 1960) limestones were unconformably laid down over the Winton and Marion Formations in isolated places. Their occurrence may be structurally controlled (Reynolds et al., 1961). The limestones

were subsequently silicified to varying degrees.

Recent alluvium now covers small areas in the north and south-east. The sands of the Simpson Desert cover nearly half of the 4-mile Sheet area.

STRUCTURE

No Major structures have been mapped in the Birdsville 4-mile Sheet area. The Cretaceous Formations dip at very low angles in a south-easterly direction towards the centre of the Great Artesian Basin, and thicken in that direction.

The two scarps (up to 25' high) exposing Tertiary sandstone and Cretaceous arkose and siltstone with low easterly and south-easterly dips, are present in the northern portion of the area; they are probably part of some very gentle undulations in the Tertiary and Cretaceous rocks.

Milton and Seedsman (1961) stated that the base of the Mesozoic falls in a southerly direction at a rate of approximately 40 feet per mile. About 40 miles north of Birdsville, a sudden increase in depth of basement occurs, which may be due to large scale faulting.

ECONOMIC GEOLOGY

Petroleum. Adria Downs bore is the only deep hole, besides the recently completed Birdsville bore from which information is not yet available, that has been drilled in the Birdsville 4-mile Sheet area. The bore reached a depth of 3090 feet, penetrated the Winton and Wilgunya Formations and bottomed in the Lonsight Sandstone aquifer. No oil or gas was reported from the hole.

Petroleum gas and paraffin wax were reported from Lower Mesozoic rocks in the Great Artesian Basin (Moss, 1932), and Mott (1952) reported oil from the Blythesdale Group. The nearest oil showing was in the Bedourie bore 120 miles north of Birdsville. The exploratory well at Betoota, 90 miles east of Birdsville penetrated about 10,000 feet of sedimentary rocks, the last 4,000 being probably of Lower Palaeozoic age. Showings of oil and gas were reported from the hole, but drill stem tests proved negative in both cases.

The surface geology in the Birdsville area is poor, and it is thought that sub-surface work only can determine whether lithological thickness and structure are present for possible oil accumulation in this part of the Great Artesian Basin.

Surface water. Permanent water holes occur in the Diamantina and Georgina Rivers. A large one in the Diamantina east of Birdsville is being used for the town water supply. To preserve water for stock, earth tanks have been built where waterholes are absent. They are constructed in streams with low gradients to prevent silting.

Underground water. Surface water is supplemented by only one artesian bore in the whole of the Birdsville 4-mile Sheet area. The Adria Downs artesian bore supplies about 300,000 gallons of potable water daily. The main aquifer occurs in sandy shale and sandstone of the Lonsight Sandstone

equivalent. Small quantities of sub-artesian water are obtained from Adria Downs No. 4 bore and Dickerrrie bore.

Sand and rock-aggregate for building purposes. The sand in the area is generally too fine to be of much use in concrete construction. Coarse sand can be obtained from creek beds in some places. Most rocks are too weathered to be of use in the preparation of concrete. Small gibbers are the only rocks that can be used for that purpose.

Timber. Timber is scarce and only suitable for fencing purposes.

BIBLIOGRAPHY

- CASEY, J.N., 1959 - New names in Queensland stratigraphy, north-west Queensland. Austr. Oil and Gas J., 5(12), 31-36.
- CASEY, J.N., REYNOLDS, M.A.,
DOW, D.B., PRITCHARD, P.W.,
VINE, R.R. and PATEN, R.J., 1960 - The geology of the Boulia area, western Queensland. Bur. Min. Resour. Aust. Rec. 1960/12 (unpublished).
- CRESPIN, I., 1960 - Micropalaeontology of samples of sediments from the Great Artesian Basin, Queensland. Bur. Min. Resour. Aust. Rec. 1960/25 (unpublished).
- CRESPIN, I., 1961 - Micropalaeontology of further rock samples from the Great Artesian Basin, Queensland. Bur. Min. Resour. Aust. Rec. 1961/35 (unpublished).
- DAINTREE, R., 1872 - Notes on the geology of the colony of Queensland. Quart. J. Geol. Soc. Lond., 27, 271-317.
- DICKINS, J.M., 1960 - Cretaceous marine macrofossils from the Great Artesian Basin in Queensland. Bur. Min. Resour. Aust. Rec. 1960/69.
- DUNSTAN, B., 1916 - Queensland geological formations. Appendix B in- Harrap, G. - A school geography of Queensland. Dep. Public Instruction, Brisbane.
- DUNSTAN, B., 1920 - North-western Queensland. Geological notes on Cloncurry-Camooweal-Burketown-Boulia area. Publ. geol. Surv. Qld, 265.
- JACK, R.L., 1895 - Artesian water in the western interior of Queensland. Bull. Qld geol. Surv., 1.
- JACK, R.L. and ETHRIDGE, R., 1892 - The geology and palaeontology of Queensland and New Guinea. Publ. geol. Surv. Qld, 92.
- MILTON, B.E. and SEEDSMAN, K.R., 1961 - Seismic Survey 1960, Great Artesian Basin, South Australia and Queensland. Prelim. Report S. Aust. Min. Dept, D.M. 1961/60.
- MOSS, F.A., 1932 - Geology and Oil Prospects of Western Queensland. Unpubl. report to Oil Search Ltd.
- MOTT, W.D., 1952 - Oil in Queensland. Qld Govt Min. J., 53, 848-861.
- NOAKES, L.C. and TRAVES, D.M., 1954 - Outline of the geology of the Barkly Region in "Survey of Barkly Region 1947-1948." Sci. ind. Res. Org. Melbourne. Ld. Res. Ser. 3, 34-41.

- PATEN, R.J., 1960 - Lacustrine sandstones and limestones and spring sinters of far western Queensland in "The Geology of Queensland". J. geol Soc. Aust., 7, 391-393.
- REEVES, F., 1951 - Australian oil possibilities. Bull. Am. Ass. Petr. Geol., 36, 2479-2525.
- REYNOLDS, M.A., 1960 - Geology of the Springvale 4-mile Sheet area, Queensland. Bur. Min. Resour. Aust. Rec. 1960/92.
- REYNOLDS, M.A., 1961 - The geology of the Bedourie 4-mile Sheet area, Queensland. Bur. Min. Resour. Aust. Rec. 1961/...
- REYNOLDS, M.A., OLGERS, F. and JAUNCEY, W., 1961 - The geology of the Bedourie; Machattie, Birdsville and Betoota 4-mile Sheet areas, western Queensland. Bur. Min. Resour. Aust. Rec. 1961/
- SPRIGG, R.C., 1958 - Petroleum prospects of western parts of Great Australian Artesian Basin. Bull. Am. Ass. Petr. Geol., 42 (10), 2465-2491.
- WHITEHOUSE, F.W., 1926 - The Cretaceous ammonoidea of eastern Australia. Mem. Qld Mus., 8(3), 195-242.
- WHITEHOUSE, F.W., 1930 - The geology of Queensland. Handbook Aust. Ass. Adv. Sci., 23-39.
- WHITEHOUSE, F.W., 1940 - Studies in the late geological history of Queensland. Pap. Univ. Qld Dept Geol., 2(1).
- WHITEHOUSE, F.W., 1941 - The surface of western Queensland. Proc. Roy. Soc. Qld, 53, 1-22.
- WHITEHOUSE, F.W., 1945 - Geological work upon the Great Artesian Basin and Additional notes on the geology of the basin. Appendices C and D to "Artesian water supplies in Queensland". First Interim Report, 22-28. Brisbane, by Authority.
- WHITEHOUSE, F.W., 1948 - The geology of the Channel Country of south-western Queensland. Bull. Qld Bureau Invest., 1, 1-28.
- WHITEHOUSE, F.W., 1953 - The Mesozoic environments of Queensland. Rep. Aust. Ass. Adv. Sci., 29, 83-106.
- WHITEHOUSE, F.W., 1954 - The geology of the Queensland portion of the Great Artesian Basin. Appendix G to "Artesian Water Supplies in Queensland". Brisbane, by Authority.
- WOOLNOUGH, W.G. and DAVID, T.W.E., 1926 - Cretaceous glaciation in central Australia. Quart. J. geol Soc. Lond., 82, 332-435.

BIRDSVILLE 4-MILE SHEET AREA

Name of Bore (Station)	Registered Number	Position	Artesian (A) of Sub-Artesian (S.A.)	Depth (Ft.) Water Struck	Depth (Ft.) Water Rose to.	Supply (Gallons per day)	Quality	Driller and Year Drilled
Adria Downs Bore (Adria Downs)	13088	34 miles E.W. of Birdsville (Track from Birdsville to bore).	A	60 150 540 3080	40 30 ? Surface	? ? ? 321,820	Good Good Salty Good	Godfrey Brothers 1957
Adria Downs No.1 (Adria Downs)		17½ miles E.W. of Birdsville	S.A.	42 55-60 190	55 42	Scrap Small supply Small supply	Fresh Fresh Salt	R. Ruwaldt. 1958
Adria Downs No.2 (Adria Downs)		200 yards W. of No.1	S.A.		Similar to No.1			R. Ruwaldt. 1958
Adria Downs No.3 (Adria Downs)		26 miles W.E.W. of Birdsville	S.A.	66 68-200	40	Small supply)2400 Small supply)	Fresh Salt	R. Ruwaldt. 1958
Adria Downs No.4 (Adria Downs)		40 miles N.W. of Birdsville	S.A.	29-34	25	15,640	Very good	R. Ruwaldt. 1959
Adria Downs No.5 (Adria Downs)		7½ miles E.E.W. of No. 4.	S.A.	45-47	29	19,920	Very good	R. Ruwaldt. 1959
Adria Downs No.6 (Adria Downs)		6 miles W.S.W. of No.3	S.A.	34	33	48	Salt	R. Ruwaldt. 1959.
Dickerrrie No.1 (Glengyle)		3 miles E.E.W. of Adria Downs No.5	S.A.	22-25	20	24,000	Good	R. Ruwaldt. 1959.
Dickerrrie No.2 (Glengyle)		20 feet W of No.1	S.A.	22	20	20,400	Good	R. Ruwaldt. 1959.
Moochala (Glengyle)		8 miles E.E.W. of Annandale	S.A.	31-35	30	16,800	Salty	R. Ruwaldt. 1959.
Muncoonie No.1 (Glengyle)		At Muncoonie Out- station.	S.A.	18-26 26-29 29-34	? ? ?	5,760	? Bitter Salt	R. Ruwaldt. 1959.
Muncoonie No.2 (Glengyle)		100 yards up- river from No.1	S.A.	24 25½ 32½	20	5,760	Fresh Salt	R. Ruwaldt. 1959.
Old Annandale (Glengyle)	1170	100 yards S.E. of Old Annandale ruins.	S.A.	45	?	No supply, failed.	Good	D.J. Shepley 1924.

DIAGRAMMATIC CORRELATION OF BORE LOGS IN THE BIRDSVILLE 4-MILE AREA.

Figure 2.

- SA. - Sub-artesian bore.
- A. - Artesian bore.
- ✕ - Abandoned bore.
- R.C. 1. - South Australian Mines Department shot hole No. R.C. 1., 1960.
- W. - Water.
- L252 - Surveyed height.

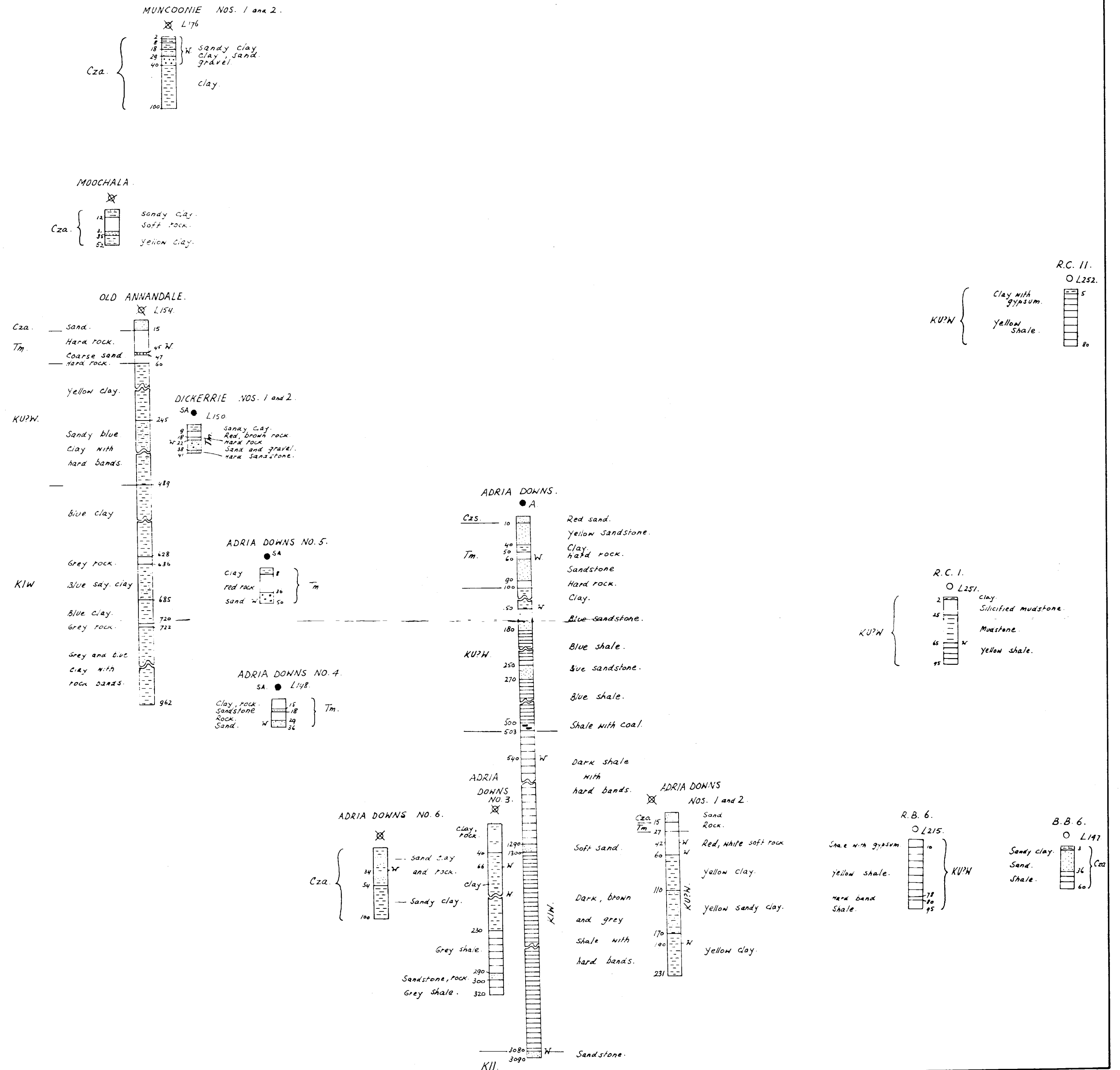
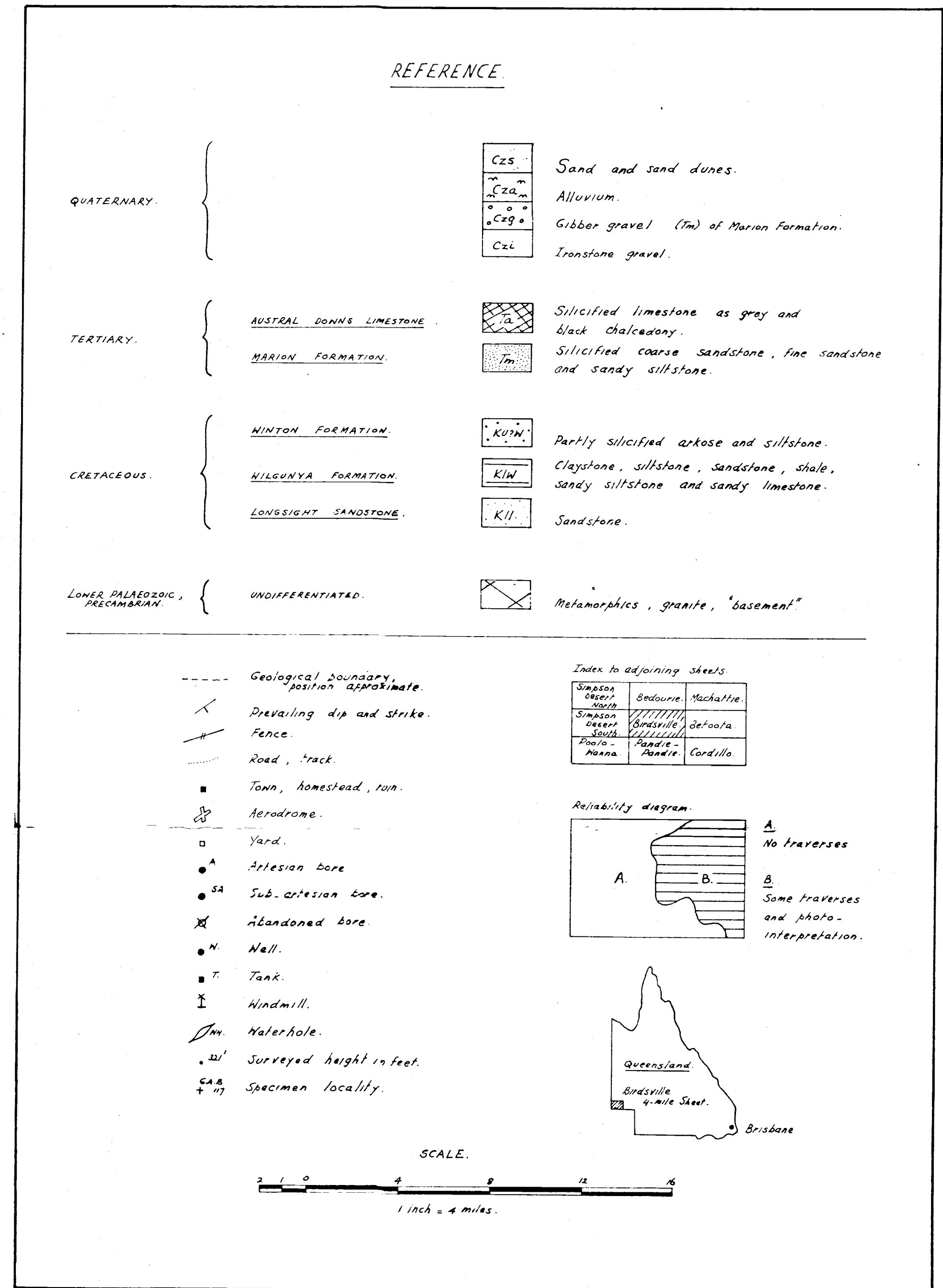


Figure 3.



DIAGRAMMATIC SECTION THROUGH THE BIRDSVILLE 4-MILE SHEET AREA.

