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COMMONWEALTH OF AUSTRALIA



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DEPARTMENT OF NATIONAL DEVELOPMENT
BUREAU OF MINERAL RESOURCES
GEOLOGY AND GEOPHYSICS

RECORDS:

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MICRO EXAMINATION OF ROCK SAMPLES FROM THE NORTHERN WEST
BASIN, WESTERN AUSTRALIA.

by

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MICROPALAEONTOLOGICAL EXAMINATION OF FURTHER ROCK SAMPLES

FROM THE NORTHWEST BASIN, WESTERN AUSTRALIA,

COLLECTED BY E. CRAIG.

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Sample 4. 6 miles bearing 53° from Jubilee Well and 3.4 miles bearing 324° from Centipede Well.

Dense, cream, algal and foraminiferal limestone.

Plantae:

Lithothamnium ramosissimum Reuss
Indeterminate algal remains.

Foraminifera:

Flosculinella bontangensis Ratten
Marginopora cf. vertebralis Q. and G.
Nodosaria radícula Linne
Peneroplis cf. planatus (F. and H.)
Planorbulina mediterranea d'Orb.
Triloculina tricarinata d'Orb.
Valvulina cf. fusca Williamson
Numerous small rotaliidae and miliolidae



Sample 5. Same locality.

Dense, cream, algal and foraminiferal limestone.

Foraminifera:

Epistomaria polystomelloides (P. and J.)
Flosculinella bontangensis (Ratten)
Globigerinoides trilobus (d'Orb.)
Marginopora cf. vertebralis (Q. and G.)
Valvulina cf. fusca Williamson
Numerous small rotaliidae and miliolidae

Sample 6. White Hill, 2 miles N.W. from Giralda-Bullara road along road from Giralda to Jubilee Well.

A. Friable, cream, sandy limestone, with a little glauconite, numerous small foraminifera, sponge spicules, bryozoa and ostracoda.

Foraminifera:

Angulogenerina subangularis Parr
Anomalina perthensis Parr
Anomalina westraliensis Parr
Bulimina pupoides d'Orb.
Chilostomella oolina Schwager
Cibicides lobatulus (W. and J.)
Cibicides pseudoconvexus Parr
Cibicides pseudoungerianus (Cushman)
Cibicides cf. ungerianus (d'Orb.)
Cyclammina cf. incisa Stache
Cyclammina sp.
Discorbis sp.
Dyocibicides biserialis Cushman
Eponides cf. cocoaensis Cushman
Ellipsonodosaria cocoaensis Cushman
Globigerina bulloides d'Orb.
Globigerina mexicana Cushman
Globigerina subcretacea Chapman
Globigerinoides trilobus (d'Orb.)

Globulina minuta (Roemer)
Guttulina irregularis (d'Orb.)
Guebelina venezuelana Nuttall var. rugosa Parr
Gyroidina soldanii (d'Orb.)
Heronsallenia pusilla Parr
Lagena laevis (Montf.)
Lamarckina cf. torrei Cushman and Bermudez
Lenticulina alato-limbata (Gumbel)
Lenticulina spp.
Liebusella sp.
Marginulina cf. subbullata Hantken
Marginulina sp.
Nodosarella sp.
Nodosaria longiscata d'Orb.
Patellina sp.
Pullenia quinqueloba (d'Orb.)
Pulvinulinella obtusa (B. and H.) var. westraliensis Parr
Siphonina sp.
Spirillina sp.
Spiroplectammina sp.
Uvigerina cf. hispida Schwager
Uvigerinella sp.
Vaginullopsis cf. gradata Thalmann
Verneuilina sp. cf. parri Cushman

B. A thin section of hard portions of this sample showed abundant fine angular quartz grains, a little glauconite and a few small foraminifera.

Foraminifera:

Anomalina cf. perthensis Parr
Nodosaria radicola Linne
Guebelina sp.

Sample 7. 1/2 mile S. of Giralda-Bullara road at point 13.5 miles E. of Bullara.

Friable, cream, sandy limestone with abundant fine angular quartz grains, a little green glauconite, abundant small foraminifera, numerous sponge spicules, bryozoa and ostracoda.

Foraminifera:

Ammodiscus cf. incertus d'Orb.
Angulogenerina subangularis Parr
Anomalina perthensis Parr
Anomalina westraliensis Parr
Bolivina sp.
Bulimina pupoides d'Orb.
Cassidulina sp.
Ceratobulimina westraliensis Parr
Chilostemella oolina Schwager
Cibicides lobatulus (W. and J.)
Cibicides pseudoconvexus Parr
Cibicides pseudoungerianus (Cushman)
Cibicides sp.
Cyclammina sp.
Dentalina communis d'Orb.
Dentalina cf. mucronata (Neug.)
Dentalina cf. nasuta Cushman
Dentalina tenuicostata (Cushman and Bermudez)
Dentalina sp.
Discorbis cf. bullae Cushman
Discorbis cf. assulata Cushman
Dycibicides biserialis Cushman
Ellipsonodosaria cocoaensis Cushman
Eponides cf. cocoaensis Cushman

Gaudryina (Pseudogaudryina) crespinae Cushman
Globigerina cf. baroemoenensis Le Roy
Globigerina mexicana Cushman
Globigerina subcretacea Chapman
Globigerinoides trilobus (d'Orb.)
Globorotalia chapmani Parr
Globorotalia cf. fimbriata (Cushman)
Globulina gibba (d'Orb.)
Guttulina irregularis (d'Orb.)
Cyroidina soldanii (d'Orb.)
Cyroidina soldanii var. octocamerata Cushman and Hanna
Guembelina venezuelana Nuttall var. rugosa Parr
Haplophragmoides sp.
Haplophragmium sp.
Heronallenia pusilla Parr
Lagena hexagona (Williamson)
Lagena laevis (Montf.)
Lagena spp.
Lenticulina alato-limbata (Guembel)
Lenticulina gibba (d'Orb.)
Lenticulina limbosa (Reuss) var.
Lenticulina spp.
Lingulina cf. trilobata Scheffen
Marginulina subbullata Hantken
Nodosarella cf. constricta Cushman and Bermudez
Nodosarella subnodosa (Cuppy)
Nodosarella sp.
Nodosaria cf. laeva Cushman and Bermudez
Nodosaria longiscata d'Orb.
Nodosaria radicola Linne
Nodosaria raphanus Linne
Nonion nicobarensis Cushman
Placopsillina sp.
Pleurostomella sp.
Pseudoglandulina clarkel Parr
Pullenia quinqueloba (d'Orb.)
Pulvinulinella obtusa (B. and H.) var. westraliensis Parr
Spiroplectammina cf. wilcoxensis Cushman and Ponton
Testularia cf. recta Cushman
Trifarina cf. advena Cushman
Vaginulina legumen (Linne)
Vaginulina sp. nov.
Vaginulinopsis gladius (Phil.)
Vaginulinopsis cf. gradata Thalmann
Verneullina sp., cf. parri Cushman
Uvigerina sp.

Sample 8. 1/2 mile N. of Giralda-Bullara road along creek bank, 9.5 miles E. of Bullara.

A. Hard dense, algal and foraminiferal limestone with some iron-staining.

Plantae: Small algae indeterminate

Foraminifera:

Austrotrillina hewehini (Schlumberger)
 cf. Cribrbulimina
Floresculinella fontangensis (Rutten)
Marginopora cf. vertebralis Q. and G.
Nodosaria radicola Linne
Peneroplis cf. planatus (F. and H.)
Valvulina cf. davidiana Chapman
Valculina cf. fusca Williamson
 Numerous small milliolidae

B. Whitish, chalky limestone with a few fine quartz grains, foraminifera, chiefly small forms and sponge spicules.

Foraminifera:

Bolivina sp.
Marginopora sp.
Textularia sp.
 Small miliolidae and rotaliidae

Sample 9. 1 1/2 miles E. of Bullara-Giralia boundary. 4 1/2 miles N. of
Cardabia boundary.

Friable, cream, sandy limestone with numerous small
 foraminifera and ostracoda.

Foraminifera:

Angulogenerina subangularis Parr
Anomalina perthensis Parr
Anomalina vestraliensis Parr
Bulinina pupoides d'Orb.
Cibicides lobatulus (W. and J.)
Cibicides pseudoconvexus Parr
Cibicides pseudoungerianus (Cushman)
Cibicides spp.
Cornuspira sp.
Cyclammina sp.
Dentalina cf. communis d'Orb.
Dentalina tenuicostata Cushman and Bermudez
Discorbis cf. assulatus Cushman
Ellipsonodosaria cocoensis Cushman
Eponides cf. cocoensis Cushman
Globigerina cf. barroenensis Lo Roy.
Globigerina mexicana Cushman
Globigerina inflata d'Orb.
Globigerina subretacea Chapman
Globigerina sp.
Globigerinoides trilobus (d'Orb.)
Globorotalia cf. fimbriata (Cushman)
Globorotalia sp.
Guttulina irregularis (d'Orb.)
Cyroidina soldanii (d'Orb.)
Herona lenia pusilla Parr
Lagena laevis (Montf.)
Lagena cf. sulcata (W. and J.)
Lenticulina alato-limbosa (Guembel)
Lenticulina sp.
Marginulina subbullata Hantken
Marginulina sp.
Nodosarella sp. nov.
Nodosaria longiscata d'Orb.
Nodosaria raphanus Linne
Nodosaria radicola Linne
Nodosaria sp.
Plectofrondicularia sp.
Pleurostomella cf. nuttalli Cushman and Siefkus
Pseudoglandulina clarkel Parr
Pullenia quinqueloba (d'Orb.)
Pulvinulinella obtusa (B. and H.) var. vestraliensis Parr
Textularia sp.
Trifarina cf. adyena Cushman
Vaginulina sp. nov.
Vaginulinopsis cf. gradata Thalmann
Verneuilina sp. cf. parr Cushman
Virgulina cf. recta Cushman.

Stratigraphic and Faunal Notes on the Samples.

Rocks of Middle Miocene and Eocene ages are represented
 in this collection from the Giralia area, Northwest Australia.
 Nos. 4, 5 and 8 are regarded as Middle Miocene and Nos. 6, 7 and 9
 as Eocene.

Two lithological types are present in the Middle Miocene samples. Type 1 includes Nos. 4, 5 and QA and is represented by a hard, dense limestone containing calcareous algae, large zonal foraminifera such as Flosculinella bontangensis, Austrotrilling howchini and Marginopora cf. vertebralis and numerous small species of miliolidae. This rock type is prominent amongst the Middle Miocene limestones and apparently occurs at the top of the horizon. It is identical with samples Nos. 3b and 3c reported upon 25.1.49.

Type 2 represents a facies change of Type 1, and indicates deposition further off-shore than the latter under conditions in which small species thrived. A fragment of a large Marginopora was noted in a thin section of the rock.

An entirely new assemblage of foraminiferal species for the rocks in the Northwest Basin occurs in samples Nos. 6, 7 and 9. The rocks are sandy limestones which represent a lithological facies not previously examined from the area. All species of foraminifera in these sandy limestones are small and are identical with those described by Parr in 1937 from the King's Park Bore, Perth, which he referred to the Upper Eocene. Stratigraphic observations in the Giralia area place these sandy limestones below beds containing such typical shallow water Eocene genera as Discocyclina, Pellatispira and Nummulites. The / genera occur in ^{first} _{two} the Upper Eocene but do not range higher than that. At the same time the presence of Globigerinoides amongst the smaller foraminifera in samples Nos. 6, 7 and 9, supports an Upper Eocene age as this genus does not appear until the Upper Eocene in different Tertiary deposits throughout the world.

Not only do many of the species resemble those from the King's Park Bore, but some are similar to species described by Cushman and others from the Upper Eocene deposits of Southeastern United States, Mexico, Cuba and Trinidad. At first glance the assemblage strongly resembles the small forms described by Le Roy in 1944 from the Miocene deposits of the Netherlands East Indies. Amongst the forms which distinguish the present assemblage from the Middle Tertiary one is the Lower Tertiary and Upper Cretaceous minute genus, Guembelina, which Parr also found in the King's Park Bore.

Seventy-two species have been recognised in the material from Giralia. Of these thirty-four are similar to those described by Parr who determined 62 species from the bore samples. Many of the species are referred to those described by Cushman and others from the Eocene of America. Other forms listed by Parr and the writer range elsewhere from Eocene to Miocene and even to Pliocene and Recent. One species showed close affinities with an Upper Cretaceous form from the Gin Gin deposits.

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