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Stratigraphic and paleocurrent analysis of the Ecca series and Lowermost Beaufort Beds in the Karroo basin of South Africa

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BOTSWANA
SOUTH WEST AFRICA
JOHANNESBURG
Barberton
SWAZILAND
MOÇAMBIQUE
OUTCROP
KIMBERLEY
BLOEMFONTEIN
LESOTHO
ESTIMATED LIMIT OF NORTHERN ECCA FACIES
DURBAN
INDIAN OCEAN
ESTIMATED LIMIT OF CENTRAL ECCA FACIES
Graaff-Reinet
Middelburg
Cradock
Queenstown
Beaufort West
Sutherland
ESTIMATED LIMIT OF WESTERN ECCA FACIES
East London
Grahamstown
Oudtshoorn
ATLANTIC OCEAN
FACIES DISTRIBUTION MAP OF THE ECCA SERIES IN THE KARROO BASIN
LEGEND
NORTHERN ECCA FACIES
CENTRAL ECCA FACIES
SOUTHERN ECCA FACIES
WESTERN ECCA FACIES
SCALE
Miles
Compiled and Drawn by F.J.RYAN


BOTSWANA
SOUTH WEST AFRICA
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SWAZILAND
MOÇAMBIQUE
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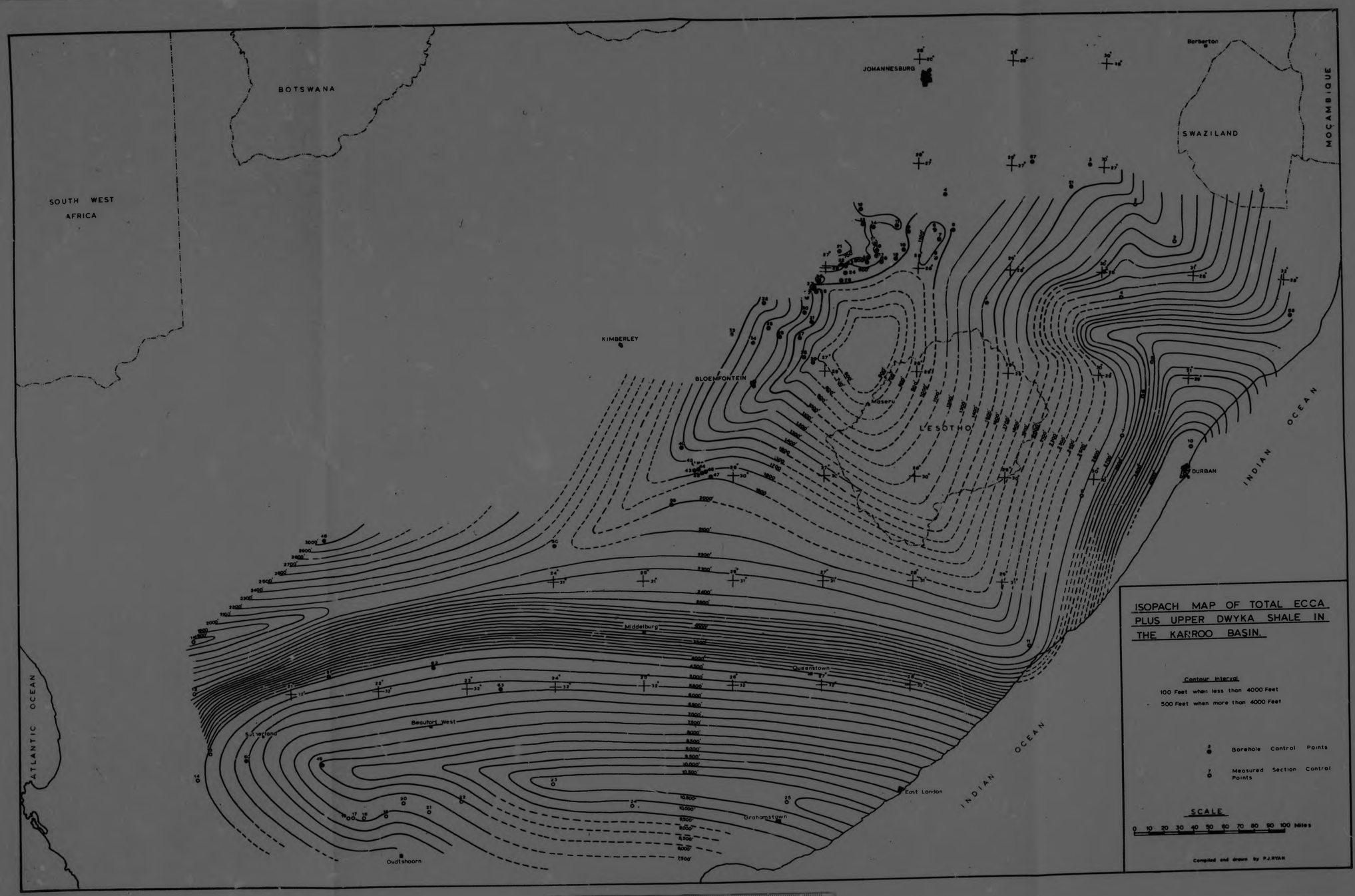
INDIAN OCEAN
FACIES DISTRIBUTION MAP OF THE ECCA SERIES IN THE KARROO BASIN.
LEGEND
NORTHERN ECCA FACIES
CENTRAL ECCA FACIES
SOUTHERN ECCA FACIES
WESTERN ECCA FACIES
SCALE
Compiled and Drawn by P.J.BRYAN



ISOPACH MAP OF TOTAL ECCA PLUS UPPER DWYKA SHALE IN THE KARROO BASIN.

Contour Interval

100 Feet when less than 4000 Feet

500 Feet when more than 4000 Feet

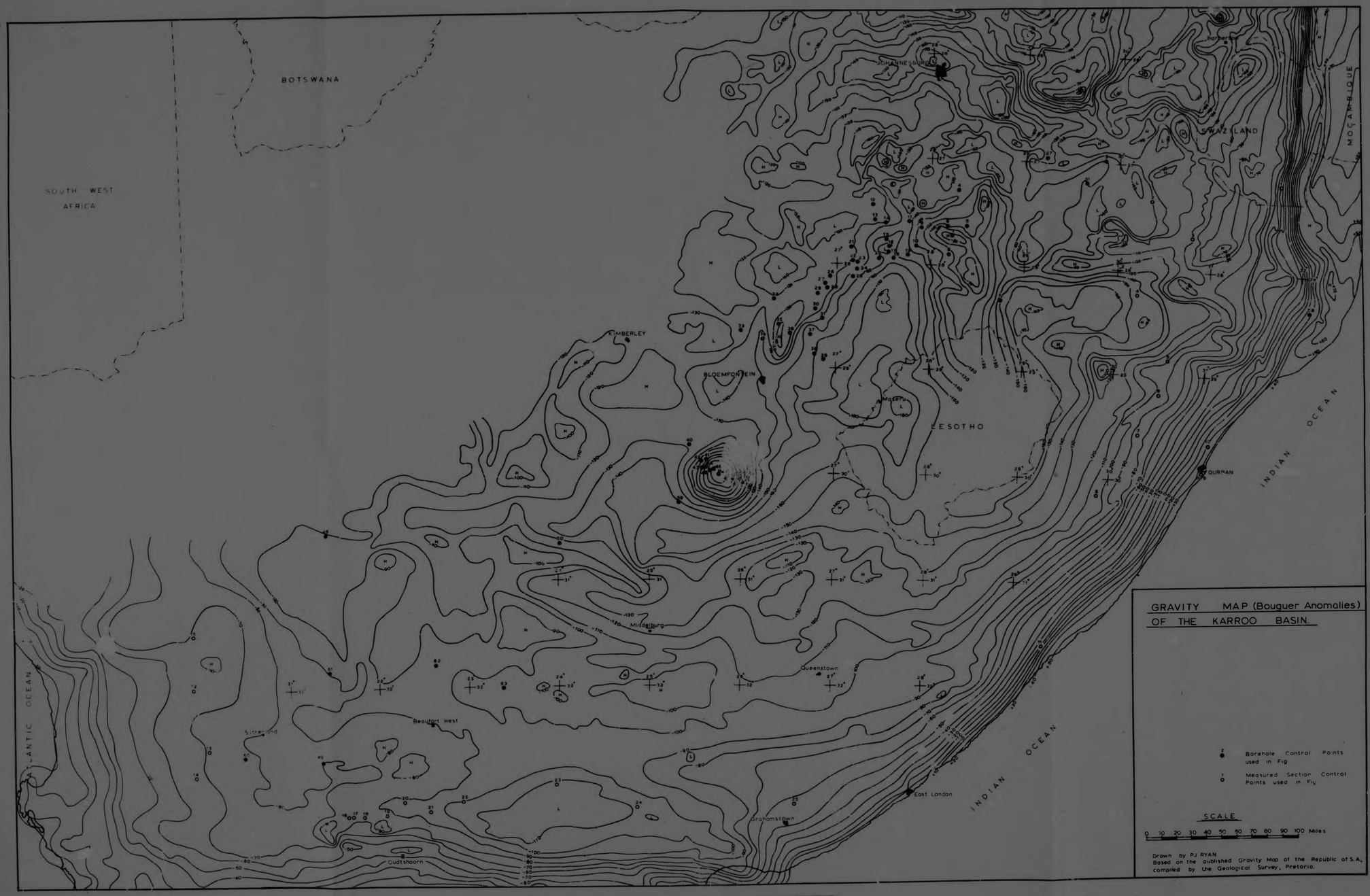
Borehole Control Points

Measured Section Control Points

SCALE

0 10 20 30 40 50 60 70 80 90 100 Miles

Compiled and drawn by P.J.RYAN



GRAVITY MAP (Bouguer Anomalies) OF THE KARROO BASIN.

Borehole Control Points used in Fig

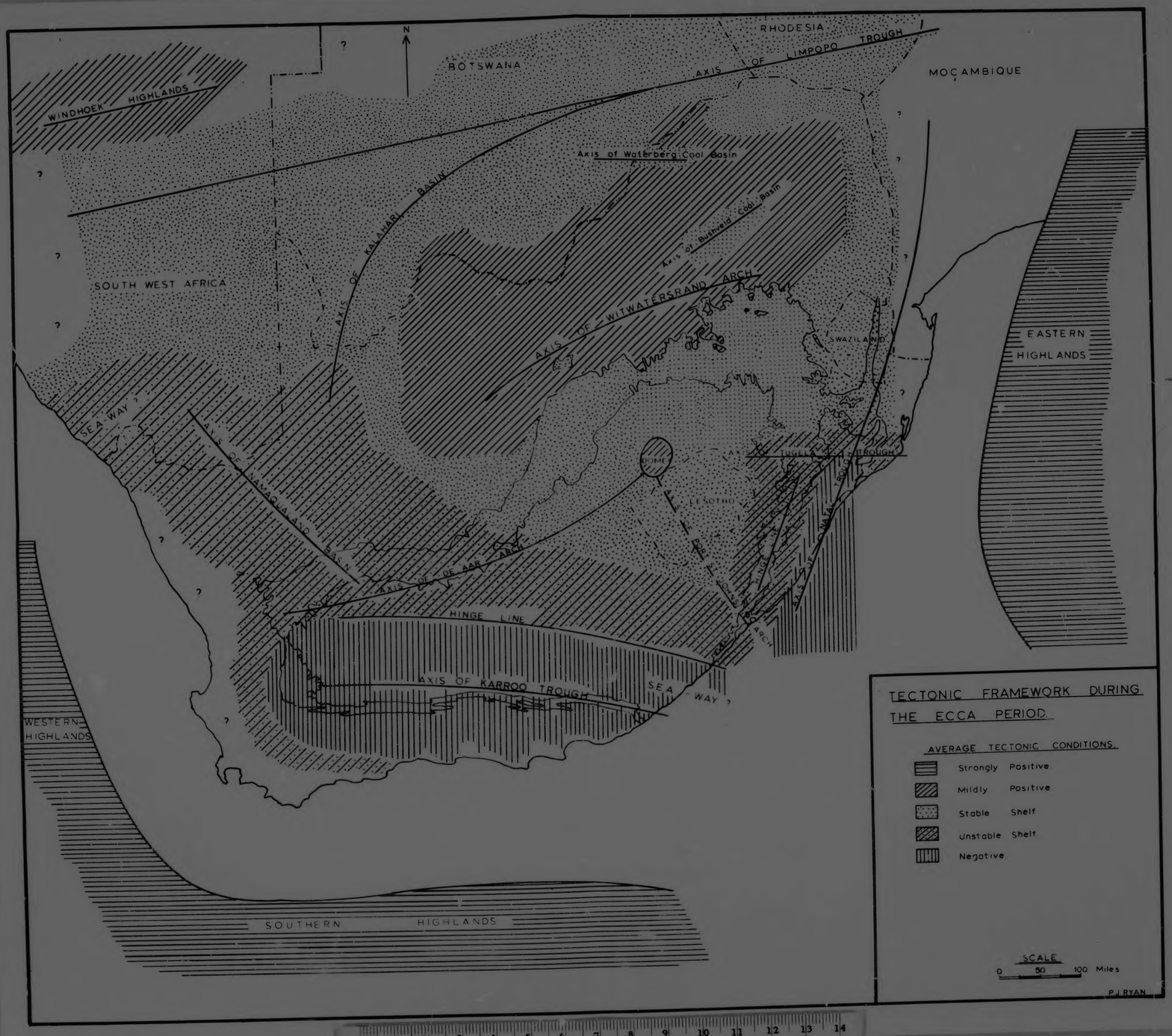
Measured Section Control Points used in Fig

SCALE

0 10 20 30 40 50 60 70 80 90 100 Miles

Drawn by PJ RYAN.
Based on the published Gravity Map of the Republic of S.A. compiled by the Geological Survey, Pretoria.




N
RHODESIA
BOTSWANA
MOÇAMBIQUE
WINDHOEK HIGHLANDS
AXIS OF LIMPOPO TROUGH
Axis of Waterberg Coal Basin
Axis of Witbank Coal Basin
AXIS OF KALAHARI BASIN
SOUTH WEST AFRICA
AXIS OF WITWATERSRAND ARCH
SWAZILAND
EASTERN HIGHLANDS
SEA WAY
AXIS OF NAMAQUA LAND BASIN
DOME
LESOTHO
AXIS OF DE AAR ARCH
HINGE LINE
AXIS OF KARROO TROUGH
SEA WAY
WESTERN HIGHLANDS
SOUTHERN HIGHLANDS
TECTONIC FRAMEWORK DURING THE ECCA PERIOD.
AVERAGE TECTONIC CONDITIONS.
Strongly Positive
Mildly Positive
Stable Shelf
Unstable Shelf
Negative
SCALE
0 50 100 Miles
P.J RYAN


CENTIMETRES
RECORDAK
INCHES



RIPPLE-INDEX IN THE ECCA SERIES AND LOWERMOST BEAUFORT BEDS OF THE KARROO BASIN.

RIPPLE-INDEX SCALE

32-64
16-32
8-16
4-8
2-4

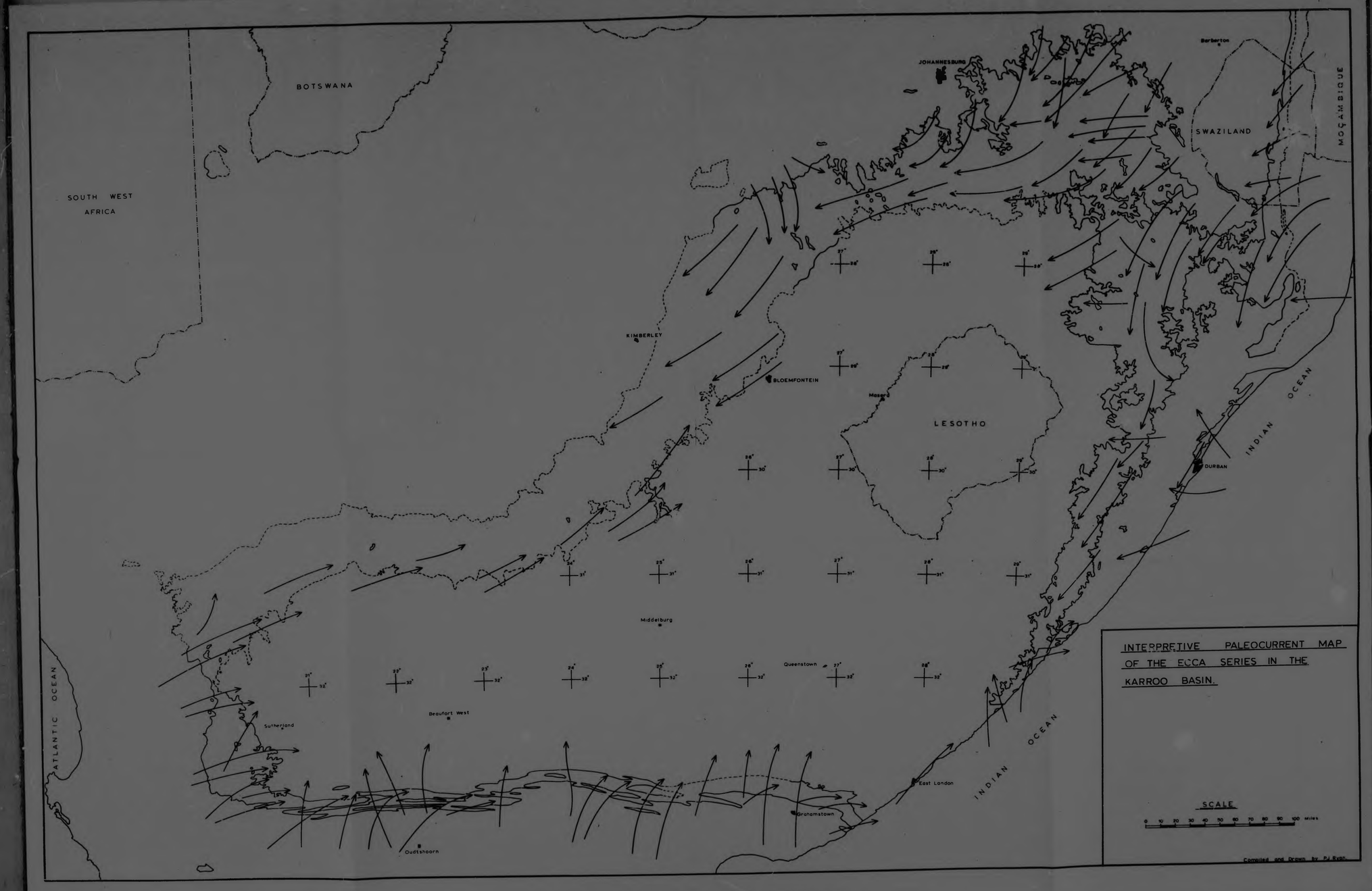
SCALE

0 10 20 30 40 50 60 70 80 90 100 Miles

Compiled and Drawn by P.J.Rose.


BOTSWANA
SOUTH WEST AFRICA
JOHANNESBURG
SWAZILAND
MOÇAMBIQUE
KIMBERLEY
BLOEMFONTEIN
LESOTHO
DURBAN
INDIAN OCEAN
ATLANTIC OCEAN
Middelburg
Queenstown
Beaufort West
Sutherland
East London
Grahamstown
Oudtshoorn
MEAN THICKNESS OF PLANER CROSS-BEDDED UNITS IN THE ECCA SERIES OF THE KARROO BASIN.
SCALE
16–32 FEET
8–16 " "
4–8 " "
2–4 " "
1–2 " "
½–1 " "
SCALE
0 10 20 30 40 50 60 70 80 90 100 Miles
Compiled and drawn by N. Ryan


RECORDAK



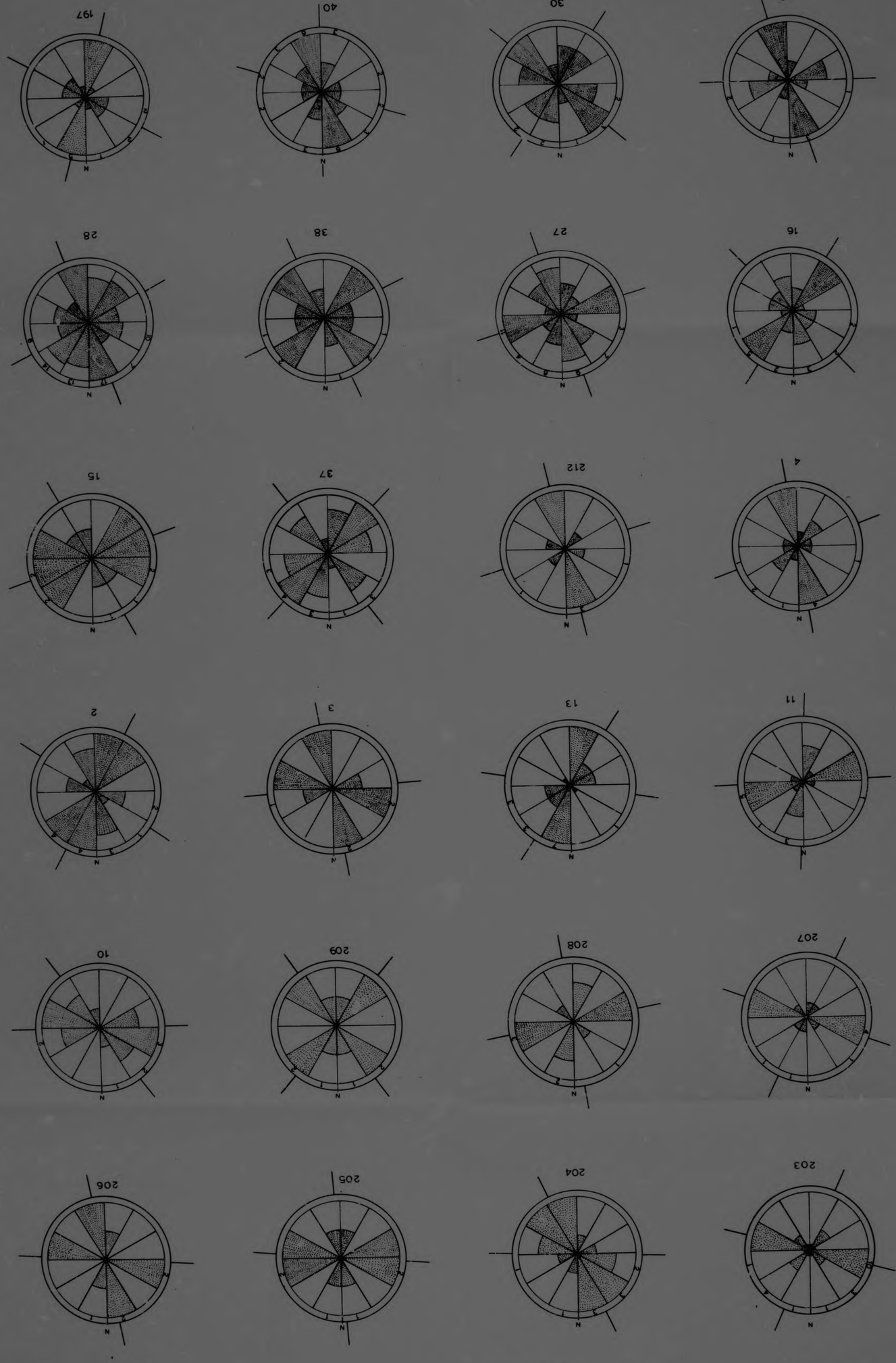
INTERPRETIVE PALEOCURRENT MAP OF THE ECCA SERIES IN THE KARROO BASIN.

SCALE

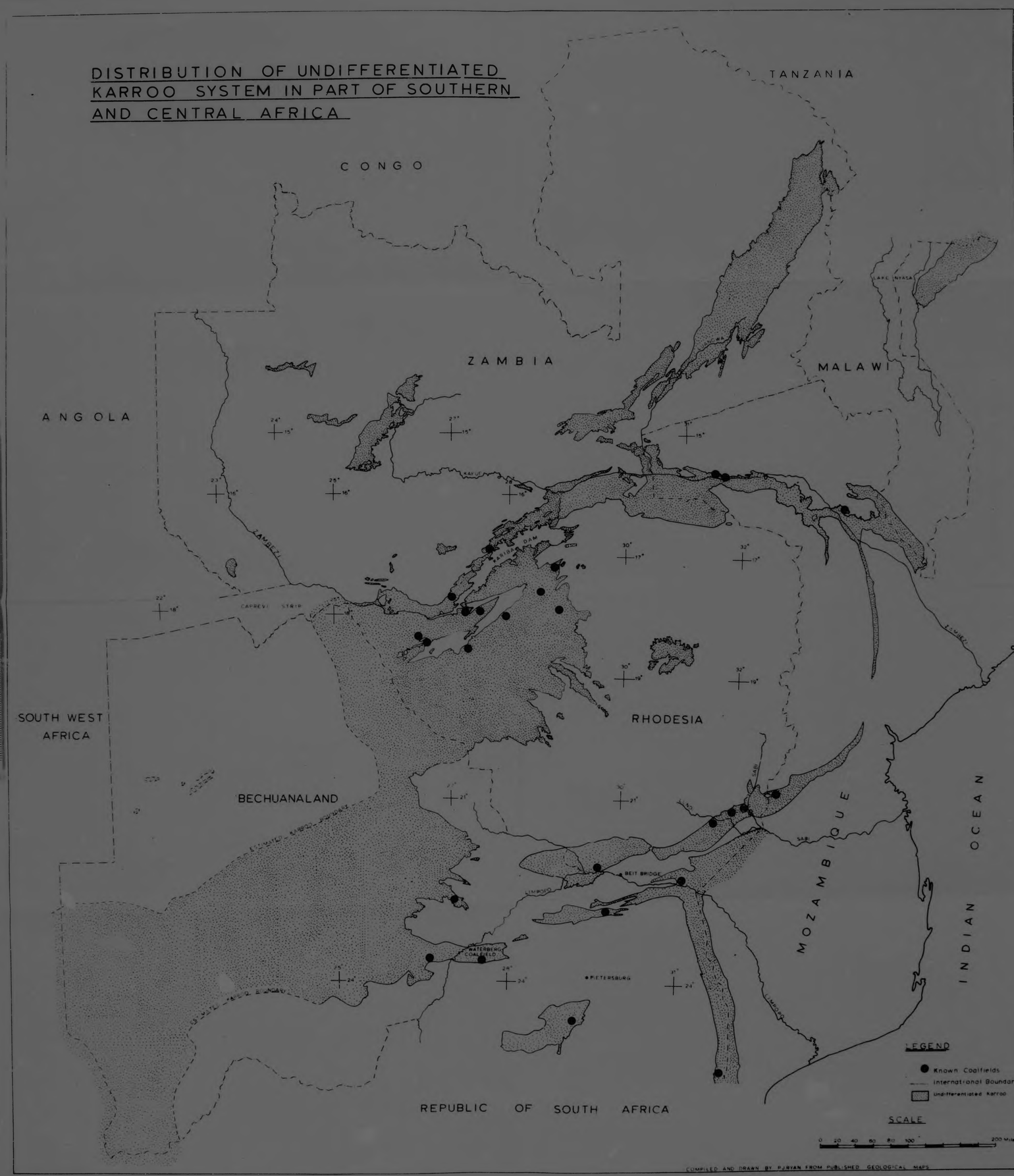
0 10 20 30 40 50 60 70 80 90 100 miles

Compiled and Drawn by P.J. Ryan.





ROSE DIAGRAMS OF FUCOID STRUCTURES IN THE ECCA SERIES


DISTRIBUTION OF UNDIFFERENTIATED KARROO SYSTEM IN PART OF SOUTHERN AND CENTRAL AFRICA
TANZANIA
CONGO
ZAMBIA
MALAWI
ANGOLA
SOUTH WEST AFRICA
BECHUANALAND
RHODESIA
MOZAMBIQUE
INDIAN OCEAN
REPUBLIC OF SOUTH AFRICA
CAPREVI STRIP
BEIT BRIDGE
WATERBERG COALFIELD
PIETERSBURG
LEGEND
Known Coalfields
International Boundary
Undifferentiated Karroo
SCALE
0 20 40 60 80 100 200 Miles
COMPILED AND DRAWN BY PJRYAN FROM PUBLISHED GEOLOGICAL MAPS

DISTRIBUTION OF UNDIFFERENTIATED KARROO SYSTEM IN PART OF SOUTHERN AND CENTRAL AFRICA

TANZANIA
CONGO
ZAMBIA
MALAWI
ANGOLA
LAKE NYASA
KAFUE
ZAMBEZI
KARIBA DAM
CAPREVI STRIP
SOUTH WEST AFRICA
RHODESIA
BECHUANALAND
SABI
LIMPOPO
BEIT BRIDGE
MOZAMBIQUE
INDIAN OCEAN
WATERBERG COALFIELD
PIETERSBURG
REPUBLIC OF SOUTH AFRICA

LEGEND
- Known Coalfields
- International Boundary
- Undifferentiated Karroo

SCALE
0 20 40 60 80 100 200 Miles

COMPILED AND DRAWN BY P.J.RYAN FROM PUBLISHED GEOLOGICAL MAPS

Author Ryan P J
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