

REFERENCES

- ✓ BEETZ, W. (1927), The Lichtenburg diamond fields. Unpubl. Rep. Geol. Dept., De Beers Consolidated Mines Ltd. 39 pp.
- ✓ BLISSENBACH, E. (1954), Geology of alluvial fans in semi-arid regions. Bull. geol. soc. Am., 65, 175-190.
- ✓ BOND, G.W. (1967), River valley morphology, stratigraphy and palaeoclimatology in southern Africa. Background to evolution in Africa, 303-312.
- ✓ BOTT, M.H.P. (1960), The use of rapid digital computing methods for direct gravity interpretation of sedimentary basins. Geophys. J., 3, 63-67.
- ✓ BRAIN, C.K. (1958), The Transvaal Ape-man bearing cave deposits. Transvaal Mus. Mem., 11.
- ✓ BRETZ, J.H. (1942), Vadose and phreatic features of the limestone cavern. J. Geol., 50, 675-811.
- ✓ CVIJIC, J. (1924), The evolution of lapies. Geogr. Rev., 24, 26-49.
- ✓ DARRACOTT, B. (1973), Preliminary results from gravity and magnetic surveys of the Lichtenburg-Bakerville area. Unpubl. Rep. Geol. Surv. S. Afr., Gh. 1966, 15 pp.
- _____ (1974), Results of preliminary borehole investigation of geophysical anomalies in the Lichtenburg-Bakerville area. Unpubl. Rep. Geol. Surv. S. Afr., Gh. 2015, 21 pp.
- _____ (1974), Review of the determination of the values of gravity at the South African fundamental station and recommendations for the adoption of standard absolute values. S. Afr. J. of Sci., 70, 40-43.

- DAWSON, J.B. (1972), Kimberlites and their relation to the mantle. Phil. Trans. R. Soc. Lond., A271, 297-311.
- DAY, R.W. (1976), Dyke positions in the Lichtenburg area from aeromagnetic surveys of 1966 and 1971. Unpubl. Rep. Geol. Surv. S. Afr., Gh. 2175, 9 pp.
- _____ (1980), An interpretation of magnetometric data from the Lichtenburg and Zeerust districts, western Transvaal. M.Sc. thesis (unpubl) Univ. of Pretoria, 79 pp.
- DE WIT, M.C.J. (1980), Report on Orange river terraces in the southern Orange Free State. Unpubl. Rep. Geol. Dept. De Beers Consolidated Mines Ltd., 9 pp.
- DRAPER, D. (1927), On the occurrence of diamonds associated with the chert beds of the Dolomite Series in the districts of Lichtenburg and Ventersdorp. Trans. geol. Soc. S. Afr., XXX, 57-67.
- DU TOIT, A.L. (1933), Crustal movements as a factor in the geographical evolution of South Africa. S. Afr. Geogr. J., 16, 3-20.
- _____ (1951), The diamondiferous gravels of Lichtenburg. Mem. geol. Surv. S. Afr., 44, 1-50.
- _____ (1954), Geology of South Africa. Oliver and Boyd, London.
- ERVIN, C.P. (1977), Theory of the Bouguer anomaly. Geophys., 42, 146 pp.
- FILMALTER, J.F. (1978), Technical report on geophysical work done on the diamondiferous gravels in the Lichtenburg district. Unpubl. Rep. geol. Surv. S. Afr.
- GRAVENOR, C.P. (1954), Mineralogical and size analysis of weathering zones on Illinoian till in Indiana. Am. J. of Sci., 252 61-63.

_____ and STUPAVSKY, M. (1974), Magnetic susceptibility of the surface tills of southern Ontario. Can. J. Earth Sci., 11, 658-662.

_____ (1979), The nature of the late Paleozoic glaciation in Gondwana as determined from an analysis of garnets and other heavy minerals. Can. J. Earth Sci., 16, 1137-1152.

HALL, A.L. (1932), The Bushveld Igneous Complex of the central Transvaal. Mem. Geol. Surv. S. Afr., 28, 810 pp.

HARGER, H.S. (1922), The underground erosion of the South Western Transvaal dolomites. S. Afr. Geogr. J., 5, 55-65.

HAUGER, M.E. (1973), Geofisiese ondersoek in die Bo-Malopo onderwater-beheergebied, Grootfonteinkompartement, distrik Lichtenburg. Unpubl. Rep. Geol. Surv. S. Afr., Gh 1953.

HEILAND, C.A. (1940), Geophysical Exploration. Prentice-Hall, New York, 1013 pp.

HEISKANEN, W.A. and VENING MEINESZ, F.A. (1958), The earth and its gravity field. McGraw-Hill Inc. New York. 470 pp.

HUNTER, D.R. (1974), Crustal development in the Kaapvaal craton, Part II, Precambr. Res., 2, 295-326.

JENNINGS, J.N. (1971), An introduction to systematic geomorphology. Karst 7, M.I.T., Cambridge. 252 pp.

KLEYWEGT, R.J. and ENSLIN, J. (1973), The application of the gravity method to the problem of ground settlement and sinkhole formation in dolomite on the Far West Rand, South Africa. Symp. of IAEG on sinkholes and subsidence and engineering geological problems.

KOULOMZINE, T.H., LAMONTAGNE, Y. and NADEAU, A. (1970). New methods for the direct interpretation of magnetic anomalies caused by inclined dykes of infinite length. Geophysics, 35, 812-830.

- MARKER, M.E. (1972), Karst landform analysis as evidence for climatic change in the Transvaal. S. Afr. Geogr. J., 54, 152-16 .
- MARTINI, J. and KAVALLIERIS, I. (1976), The karst of the Transvaal. Int. J. Speleology, 8, 229-251.
- MAYER, J.J. (1973), Morphotectonic development of the Harts River Valley in relation to the Griqualand-Transvaal axis and the Vaal and Molopo River. Trans. geol. Soc. S. Afr., 73, 57-67.
- MAHER, M.J. (1979), Geology; A fortran sub-routine for the conversion of geographic co-ordinates to co-ordinates of the Lo system. Unpubl. Rep. geol. Surv. S. Afr., 0057.
- MONEYMAKER, B.C. (1941), Subriver solution cavities in the Tennessee Valley. J. Geol., 49, 74-86.
- PALMER, E.J. (1978), A geophysical study of the Grootfontein dolomitic groundwater compartment in the Rooigrond area. Unpubl. Rep. geol. Surv. S. Afr., Gh . 2542.
- PARASNIS, D.S. (1962), Principles of applied geophysics. Chapman and Hall Ltd., London. 38-73.
- PARKER GAY, S. (1963), Standard curves for interpretation of magnetic anomalies over long tubular bodies. Geophysics, 28, 161-200.
- PETERS, L.J. (1949), The direct approach to magnetic interpretation and its practical application. Geophysics, 14, 290-320.
- PETTIJOHN, E.J. (1941), Heavy minerals and geological age. J. Geol., 49, 610-625.
- RETIEF, E.A. (1960), The diamondiferous gravels in the Lichtenburg-Ventersdorp area. Unpubl. Rep. geol. Surv. S. Afr., Eg. 3/44.
- RICHARDS, D.J. (1973), Dykes in the Lichtenburg area determined from the aeromagnetic surveys of 1966, 1971. Unpubl. Rep. geol. Surv. S. Afr., Gh. 1969.

_____ (1974), Three rapid direct methods for estimating depth to thin two-dimensional semi-infinite magnetic slabs. Ann. geol. Surv. S. Afr., 10, 101-106.

_____ and DAY, R.W. (1975), Revision of dyke positions in the Zeerust area from aeromagnetic surveys of 1966 and 1971. Unpubl. Rep. geol. Surv. S. Afr., Gh. 2079.

_____ (1977), Magnetic surveys; notes for geological survey colloquium. Unpubl. Rep. geol. Surv. S. Afr., Gh 2265, 6 pp.

✓ RICHARDUS, P. (1966), Project Surveying, North Holland Publishing Co. Amsterdam, 20-29.

✓ SELLY, R.C. (1969), Ancient sedimentary environments. Chapman and Hall Ltd., London. 237 pp.

✓ STETTLER, E.H. (1979), A geological and geophysical investigation of the diamond runs on Ruigtelaagte and vicinity, in the Bakerville area, Lichtenburg district. M.Sc. thesis (unpubl.) Univ. of Pretoria. 112 pp.

STRATTEN, T. (1967), A preliminary report on a directional study on the Dwyka Tillites in the Karoo basins of South Africa. In; Gondwana stratigraphy, 2, 741-762.

_____ (1977), Conflicting directions of Dwyka Ice Flow in the western Cape province and southern South West Africa. Trans. Geol. Soc. S. Afr., 80, 79-86.

_____ (1979), The origin of the diamondiferous alluvial gravels in the south-western Transvaal. Geol. Soc. of S. Afr., Spec. Publ., 6, 219-228.

✓ TELFORD, W.M., GELDART, L.P. SHERIFF, R.E. and KEYS, D.A. (1976), Applied Geophysics, Cambridge University Press, Cambridge, 680 pp.

- ✓ VON BACKSTROM, J.W., SCHUMANN, F.W., LE ROUX, H.D., KENT, L.E. and DU TOIT, A.L. (1953), The geology of the area around Lichtenburg. Explanation of sheet 54, Geol. Surv. S. Afr.
- ✓ WILLIAMS, P.F. and RUST, B.R. (1969), The sedimentology of a braided river. J. Sed. Petrol., 39, 649-679.
- ✓ WILSON, J.G. (1977), A photogeological investigation of the major controls of Fluorspar, Lead and Zinc ores in the Zeerust area, Western Transvaal. M.Sc. thesis (unpubl.) Univ. of Pretoria. 133 pp.

APPENDIX A

Co-ordinates of beacons used in resection and co-ordinates and theoretical gravity values of corner points.

1. Co-ordinates of the beacons used in the Grasfontein area of map 2526 CC and 2626 AA;

<u>BEACONS</u>	<u>Y</u>	<u>X</u>
273	95 384,37	2 875 173,34
18	92 674,56	2 869 706,80
26	99 072,14	2 878 216,07
248	98 129,66	2 874 121,94
480	92 464,71	2 878 488,18

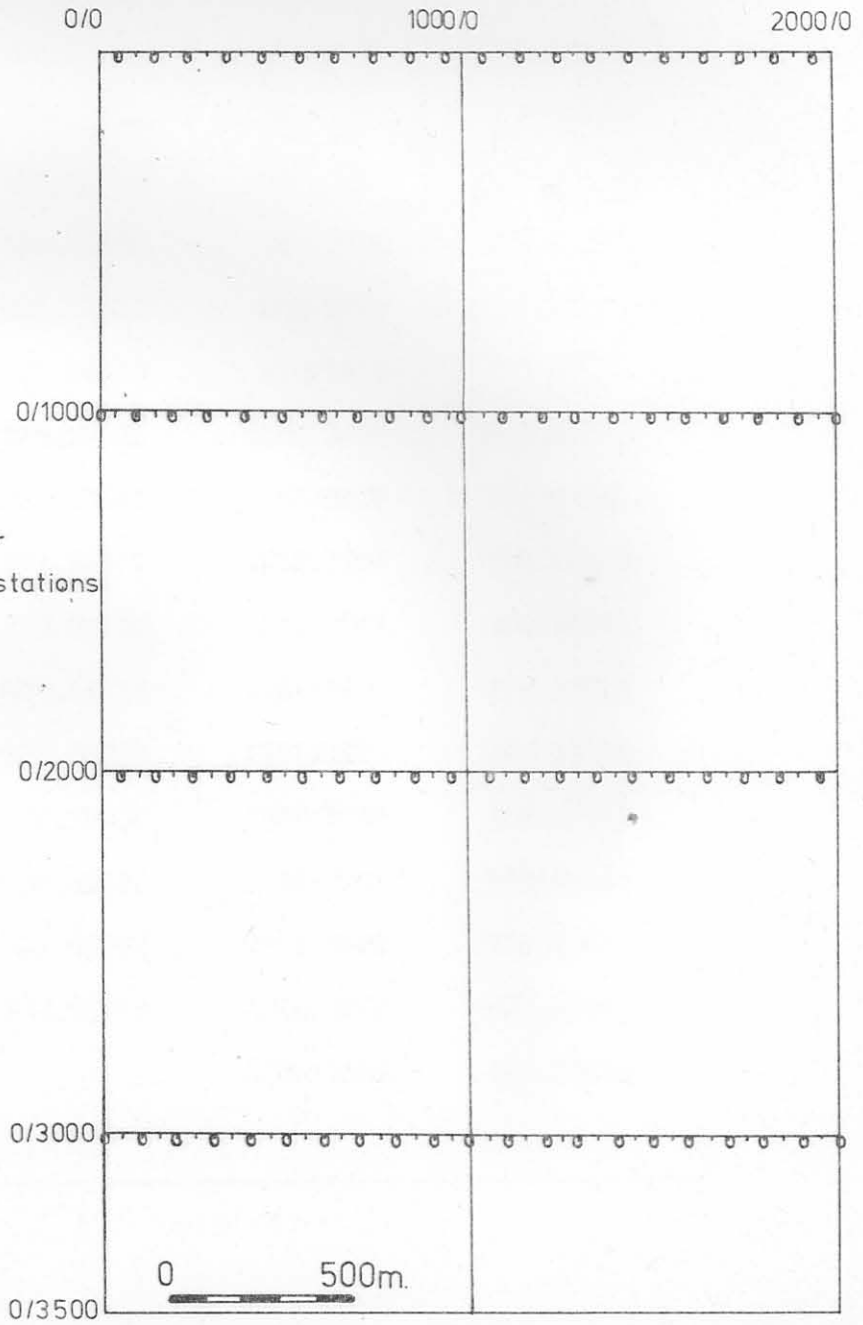
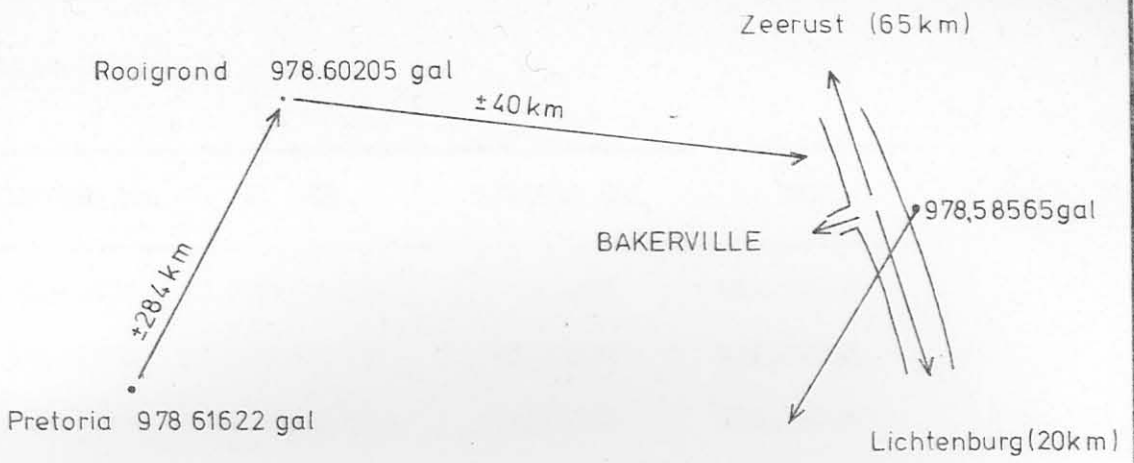
2. Co-ordinates and theoretical gravity values of the corner points of the grid;

<u>POINT</u>	<u>Y</u>	<u>X</u>	<u>G_t</u>
0/0	96 300,00	2 874 100,00	979,023019
1000/0	95 300,00	2 874 100,00	979,023019
2000/0	94 300,00	2 874 100,00	979,023019
0/1000	96 300,00	2 875 100,00	979,023661
1000/1000	95 300,00	2 875 100,00	979,023661
2000/1000	94 300,00	2 875 100,00	979,023661
0/2000	96 300,00	2 876 100,00	979,024303
1000/2000	95 300,00	2 876 100,00	979,024303
2000/2000	94 300,00	2 876 100,00	979,024303
0/3000	96 300,00	2 877 100,00	979,024977
1000/3000	95 300,00	2 877 100,00	979,024977
2000/3000	94 300,00	2 877 100,00	979,024977
0/3500	96 300,00	2 877 600,00	979,025266
1000/3500	95 300,00	2 877 600,00	979,025266
2000/3500	94 300,00	2 877 600,00	979,025266

APPENDIX BGravity base stations: co-ordinates and values

Gravity values and station numbers of the gravity bases on
Grasfontein 356 JP derived from the Bakerville base (978,58565 gal.)

STATION NO.	G. OBS.	STATION NO.	G. OBS.
50/0	978,58768	0/1000	978,58772
150/0	978,58779	100/1000	978,58755
250/0	978,58808	200/1000	978,58753
350/0	978,58803	300/1000	978,58723
450/0	978,58771	400/1000	978,58703
550/0	978,58801	500/1000	978,58710
650/0	978,58804	600/1000	978,58720
750/0	978,58800	700/1000	978,58707
850/0	978,58788	800/1000	978,58654
950/0	978,58727	900/1000	978,58669
1050/0	978,58729	1000/1000	978,58687
1150/0	978,58746	1100/1000	978,58741
1250/0	978,58733	1200/1000	978,58722
1350/0	978,58742	1300/1000	978,58673
1450/0	978,58732	1400/1000	978,58702
1550/0	978,58727	1500/1000	978,58675
1650/0	978,58761	1600/1000	978,58677
1750/0	978,58768	1700/1000	978,58604
1850/0	978,58774	1800/1000	978,58569
1950/0	978,58727	1900/1000	978,58661
		2000/1000	978,58671



GRAVITY BASE STATIONS ON GRASFONTEIN 356 JP

APPENDIX B (contd.)

STATION NO.	G OBS.	STATION NO.	G OBS.
50/2000	978,58720	0/3000	978,58740
150/2000	978,58723	100/3000	978,58730
250/2000	978,58751	200/3000	978,58714
350/2000	978,58731	300/3000	978,58713
450/2000	978,58716	400/3000	978,58696
550/2000	978,58739	500/3000	978,58697
650/2000	978,58793	600/3000	978,58714
750/2000	978,58736	700/3000	978,58692
850/2000	978,58662	800/3000	978,58624
950/2000	978,58723	900/3000	978,58576
1050/2000	978,58672	1000/3000	978,58546
1150/2000	978,58640	1100/3000	978,58520
1250/2000	978,58673	1200/3000	978,58573
1350/2000	978,58700	1300/3000	978,58607
1450/2000	978,58723	1400/3000	978,58596
1550/2000	978,58728	1500/3000	978,58576
1650/2000	978,58686	1600/3000	978,58643
1750/2000	978,58722	1700/3000	978,58654
1850/2000	978,58708	1800/3000	978,58653
1950/2000	978,58670	1900/3000	978,58564
		2000/3000	978,58533