MEMORANDUM

To Mr._____ Surveyor_____

_____

It having been found expedient to extend and more clearly define the application of Arbitrary Meridians, Clauses 39, 162, 163, and 164 of the " Rules and Directions for the Guidance of Surveyors " have been cancelled, and the attached Clauses are to be substituted.   Clause 169 has been amended.   It will be noticed that the necessity for the provisions of original Clause 164 does not now exist.

Will you be good enough to insert the attached sheets opposite to the cancelled Clauses in your copy of the Directions.

Appendices xxxii. and xxxiii. giving Tables of the lengths of degrees, etc., of Latitude and Longitude may be found useful and are forwarded herewith.

A. McDOWALL,

Surveyor-General.

Clause 39.—The arbitrary initial meridian of the county (making allowance, where necessary, for convergence) is to be adopted as the datum for isolated surveys. For details see Clauses 162 to 164

Clause 162.—At the same time it must be apparent to every surveyor that the perpetuation of so variable a datum of angular measurement is inadvisable, and it has therefore been decided to adopt an arbitrary initial meridian as the datum of survey work in each county of the Colony. The position of the initial point and the deviation of the adopted meridian from the true north at that point will be decided by the Department, and will be noted in the instructions, &c., issued to Surveyors.

Clause 162A.—The meridians of survey work effected in each county are required to be maintained parallel to the initial meridian of the county—that is to say, the meridians of survey work in a county will not converge, but all north and south lines will be parallel to and all east and west lines will be at right angles to the initial arbitrary meridian.

Clause 163.—Where survey operations are extensive—dealing with large areas or groups of portions not connected with the initial meridian—it is required that the work be preceded by the astronomical determination of the true meridian. From this should be laid off the adopted deviation of the arbitrary initial meridian of the county, increased or diminished by the computed correction for convergence, so that the parallelism referred to in Clause 162A may be maintained.

Clause 164.—Where surveys effected on the arbitrary meridians in adjoining counties meet on the common boundary of those counties, connections must be made and the difference of meridians carefully recorded in the field books and on the plans. The convergence from each of the initial points to the point of junction must be computed and applied to the bearings of such line or lines as will enable a comparison of meridians to be made and form a check on the work.*

Clause 166.—Delete the words "and correcting for convergence" from the second line.

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* NOTE.—The following rules should be adopted with regard to plans of surveys that extend from one county into another.

(a) *In the case of surveys of portions.*—Separate plans of the portions in each county drawn to the arbitrary meridian of that county, and showing the difference in meridians between the two counties, must be supplied.

(b) *In the case of road or feature surveys.*—If a break can be conveniently made at the county boundary, furnish separate plans, as in (a). If no break can be made the plan must be drawn to the meridian of the county in which the datum of the survey is located, and this meridian must be maintained throughout. But a general note, relating to the lines in the second county, and stating the difference in meridian between the two counties, may be made on the plan.

N.B.—In no case should the several parts of any one plan be drawn to several different meridians, as this at once leads to confusion and error.

Appendix xxxii.

Table of Lengths of Half a Degree, a Minute, and a Second of Latitude, from Lat. 10° S. to Lat. 30° S.

LATITUDE.					LENGTH OF HALF A DEGREE.		LENGTH OF ONE MINUTE.	LENGTH OF ONE SECOND.
°	′		°	′	Statute Miles.	Links.	Links.	Links.
10	0	to	10	30	34·363	2749 04	91 63·5	152·72
10	30	,,	11	0	34·364	2749 12	91 63·7	152·73
11	0	,,	11	30	34·365	2749 22	91 64·1	152·73
11	30	,,	12	0	34·367	2749 31	91 64·4	152·74
12	0	,,	12	30	34·368	2749 41	91 64·7	152·74
12	30	,,	13	0	34·369	2749 51	91 65·0	152·75
13	0	,,	13	30	34·370	2749 62	91 65·4	152 75
13	30	,,	14	0	34·372	2749 73	91 65·8	152·76
14	0	,,	14	30	34·373	2749 85	91 66·2	152·77
14	30	,,	15	0	34·375	2749 96	91 66·5	152·77
15	0	,,	15	30	34·376	2750 09	91 67·0	152·78
15	30	,,	16	0	34·378	2750 21	91 67·4	152·79
16	0	,,	16	30	34·379	2750 34	91 67·8	152·80
16	30	,,	17	0	34·381	2750 47	91 68·2	152·80
17	0	,,	17	30	34·383	2750 61	91 68·7	152·81
17	30	,,	18	0	34·385	2750 75	91 69·2	152·82
18	0	,,	18	30	34·386	2750 89	91 69·6	152·83
18	30	,,	19	0	34·388	2751 04	91 70·1	152·83
19	0	,,	19	30	34·390	2751 19	91 70·6	152·84
19	30	,,	20	0	34·392	2751 34	91 71·1	152·85
20	0	,,	20	30	34·394	2751 50	91 71 7	152·86
20	30	,,	21	0	34·396	2751 66	91 72·2	152·87
21	0	,,	21	30	34·398	2751 82	91 72·7	152·88
21	30	,,	22	0	34·400	2751 99	91 73·3	152·89
22	0	,,	22	30	34·402	2752 16	91 73·9	152·90
22	30	,,	23	0	34·404	2752 33	91 74·4	152·91
23	0	,,	23	30	34·407	2752 51	91 75·0	152·92
23	30	,,	24	0	34·409	2752 69	91 75·6	152·93
24	0	,,	24	30	34·411	2752 87	91 76·2	152·94
24	30	,,	25	0	34·413	2753 05	91 76·8	152·95
25	0	,,	25	30	34·416	2753 24	91 77·5	152·96
25	30	,,	26	0	34·418	2753 43	91 78·1	152 97
26	0	,,	26	30	34·420	2753 62	91 78·7	152·98
26	30	,,	27	0	34·423	2753 82	91 79·4	152·99
27	0	,,	27	30	34·425	2754 01	91 80·0	153·00
27	30	,,	28	0	34·428	2754 21	91 80·7	153 01
28	0	,,	28	30	34·430	2754 42	91 81·4	153·02
28	30	,,	29	0	34·433	2754 62	91 82·1	153·03
29	0	,,	29	30	34·436	2754 83	91 82 8	153·05
29	30	,,	30	0	34·438	2755 01	91 83·5	153 06

Appendix xxxiii.

Table of the Lengths of a Degree, Minute, and Second of Longitude, from Lat. 10° S. to Lat. 30° S.

LATITUDE.	LENGTH OF ONE DEGREE.		LENGTH OF ONE MINUTE.	LENGTH OF ONE SECOND.
°	Statute Miles.	Links.	Links.	Links.
10	68·129	5450 32	90 83·87	151·40
11	67·910	5432 80	90 54·67	150·91
12	67·670	5413 60	90 22·67	150·38
13	67·410	5392 80	89 88·00	149·80
14	67·131	5370 48	89 50·80	149·18
15	66·830	5346 40	89 10·67	148·51
16	66·510	5320 80	88 68·00	147·80
17	66·169	5293 52	88 22·53	147·04
18	65·808	5264 64	87 74·40	146·24
19	65·427	5234 16	87 23·60	145 39
20	65·026	5202 08	86 70·13	144·50
21	64·606	5168 48	86 14·13	143·57
22	64·166	5133 28	85 55·47	142·59
23	63·706	5096 48	84 94·13	141·57
24	63·228	5058 24	84 30·40	140·51
25	62·729	5018 32	83 63·87	139·40
26	62·212	4976 96	82 94·93	138·25
27	61·676	4934 08	82 23·47	137·06
28	61·122	4889 76	81 49·60	135·83
29	60·548	4843 84	80 73·07	134·55
30	59 956	4796 48	79 94·13	133·24

CIRCULAR re CONVERGENCE

To Mr. Licensed Surveyor..

Herewith is forwarded a map of the County, as under, on which are shown:-
1. The Initial Point with its Latitude and Longitude;
2. The True and Arbitrary Initial Meridians with their angular difference;
3. A Projection to every ten minutes of latitude and longitude; and
4. The Parishes in the County.

In accordance with the Circular dated 1st. March, 1900, the meridians of all work in the County must be kept parallel to the Arbitrary Initial Meridian, shown on the map. To maintain this parallelism, allowances for convergence must be made in proportion to the distance of the work from the True Initial Meridian.

If, therefore, the commencing point of a piece of work lies in the True Initial Meridian for the County, the datum will have an azimuth equal to the deviation of the Arbitrary Initial Meridian, *i. e.* the angle between the True and Arbitrary Initial Meridians. In other cases the azimuth of the datum will be this angle + or – the allowance for convergence, as the commencing point lies respectively to the West or East of the True Initial Meridian.

In order to simplify the calculation of the amount to be allowed for convergence, a Convergence Table to every 10' of latitude is enclosed, and as this agrees with the projection on the map, the allowance per mile at any point can be easily picked out,– the exact allowance can, if required, be found by interpolation. The distance from the work to the True Initial Meridian must be scaled (miles and decimals) and multiplied by the allowance per mile.

Example:– The point ✗ on the map lies about..................miles..................of the True Initial Meridian. The nearest ten minute parallel of latitude is..................S., at which the convergence is..................per mile.

Deviation of the Arbitrary Initial Meridian ....= ....E

Convergence to be allowed (..........✗..........miles)= ....

Azimuth of datum for work at ✗ =..................E

As the preparation of the map involves considerable labour and expense please keep it carefully for future use.

Surveyor General.

County of ....

Initial Point ....

Latitude ....S., Longitude..................E.,

Deviation of Arbitrary Initial Meridian..................East

CONVERGENCE TABLE

Appendix XXXIV

Latitude °	Convergence in Seconds – per Statute Mile						Latitude °
	0′	10′	20′	30′	40′	50′	
10	9·18	9·34	9·49	9·65	9·80	9·96	10
11	10·12	10·28	10·43	10·59	10·75	10·91	11
12	11·06	11·22	11·38·	11·54	11·70	11·86	12
13	12·02	12·18	12·34	12·50	12·66	12·82	13
14	12·98	13·14	13·30	13·46	13·62	13·79	14
15	13·95	14·11	14·27	14·44	14·60	14·76	15
16	14·93	15·09	15·25	15·42	15·58	15·75	16
17	15·91	16·08	16·25	16·41	16·58	16·75	17
18	16·91	17·08	17·25	17:42	17·59	17·75	18
19	17·92	18·09	18·26	18·43	18·60	18·78	19
20	18·95	19·12	19·29	19·46	19·64	19.81	20
21	19·98	20·16	20·33	20·51	20·68	20·86	21
22	21·03	21·21	21·39	21·56	21·74	21·92	22
23	22·10	22·28	22·45	22·63	22·82	23·00	23
24	23·18	23·36	23·54	23·72	23·91	24·09	24
25	24·28	24·46	24·64	24·83	25·02	25·20	25
26	25·39	25·58	25·77	25·95	26·14	26·33	26
27	26·52	26·72	26·91	27·10	27·29	27·49	27
28	27·68	27·87	28·07	28·26	28·46	28·66	28
29	28·86	29·05	29·25	29·45	29·65	29·85	29
30	30·05						