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MAGNETIC RESULTS, 1938-1947

R. G. Madill and J. F. Clark

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Introduction

An account of the work of the magnetic surveys carried on by the Dominion Observatory between 1907 and 1937, inclusive, is to be found in *Publications of the Dominion Observatory*, Vol. V, No. 5; Vol. VIII, Nos. 8 and 10, and Vol. XI, No. 7. In addition, a summary of declination values in Canada north of 60° is given in Vol. XI, No. 9 (1).

In the present publication it is intended to summarize the magnetic results obtained in all parts of Canada during the years 1938 to 1947 inclusive.

The work of the surveys between 1938 and 1947 was devoted chiefly to securing as many data as possible both for secular change and for purposes of improving magnetic charts of Canada and hydrographic charts of the coastlines. Many new stations were established in Northern Canada with a view to revising the isogonal maps and also for purposes of defining the location of the magnetic north pole. Reference may be made to *Contributions from the Dominion Observatory* Vol. I, No. 3. 'The search for the north magnetic pole' by R. Glenn Madill, reprinted from *Arctic* Vol. I, No. 1. (2). The program of work carried on for many years under C. A. French and R. G. Madill was continued during the war years after French retired and Madill succeeded him as head of terrestrial magnetism. There was new emphasis on applications to air navigation and on the requirements of the army and navy. In 1945 the Magnetic Division of the Dominion Observatory was expanded and more field parties were sent out. This growth has continued, with seasonal observers being employed to good advantage in a continuation and extension of ground surveys, both regional and large-scale. Several regional-anomaly projects in the mining areas were planned and carried out.

Grateful acknowledgement is made of the cooperation of the Geodetic Survey of Canada, Topographical Survey, and Canadian Hydrographic Service, all part of the Department of Mines and Technical Surveys; the RCAF, and the Meteorological Service of Canada, Department of Transport, in supplying declination values obtained in conjunction with their regular work. The U.S. Coast and Geodetic Survey kindly loaned instruments and provided transportation to some of the Arctic stations.

Instrumental Equipment

The instrumental equipment used during the period comprised the following:

Magnetometers—

(1) Combined magnetometer—dip-circle C.I.W. No. 20.

(2) Combined magnetometer—earth inductor P.I.C. No. 104.

(3) Magnetometer Cooke No. 15.

(4) C.I.W. magnetometer No. 8. (1947).

(5) New fluxgate electrical magnetometer No. 1.

Dip instruments—

(1) Dover dip-circle No. 130.

(2) Dover dip-circle No. 145.

(3) Dover dip-circle No. 211.

(4) Dover dip-circle No. 212.

(5) Earth inductor P.I.C. No. 104.

(6) Earth inductor Toepfer No. 1911. Secondary standard, used for base-station work.

Theodolites with compass attachments—

(1) Cooke theodolite T.S. 1576.

(2) Cooke theodolite T.S. 2314 with telescopic compass used for declinations in the Arctic.

(3) Gurley 11 compass transit.

Variometer—

(1) Askania vertical-force variometer No. 1256. Used in mining areas in 1946.

Chronometers—

(1) Half-seconds pocket chronometer Nardin No. 19726.

(2) Half-seconds pocket chronometer Nardin No. 19728.

(3) Half-seconds pocket chronometer Kittel 261.

(4) Longines pocket chronometer Serial No. 608959.

Ancillary equipment—

Wireless receiving sets; a number of Hallicrafter portable, battery-powered radio receivers for time signals; observing tents, living tents, tarpaulins, eiderdown robes, steel measuring tapes, bench marks, and miscellaneous field gear.

Magnetic Observations and their Reduction

As stated in Vol. XI, No. 7, (3), the methods of observation and reduction were similar to those described previously. The greatest departure is in connection with the portable electrical magnetometer first used in 1947, whereby a complete set of readings for declination, inclination and force may be secured in 15 minutes. This permits a revision of the observing schedule so that readings may be taken every hour and on the half-hour if desired.

The custom was followed of applying instrumental index corrections as obtained by IMS methods. The diurnal variation corrections were applied algebraically followed by disturbance correction where necessary. The disturbance corrections were deduced from the nearest magnetic observatory records and were applied algebraically to obtain final station values. The values as published are considered representative mean daily values for the date of observation. Values of the elements for locations other than these listed here may be derived from map sheets published by the Magnetic Division. Annual change data on these maps make possible revision of old station values to a current date, and values at intermediate points may be found by interpolation. Total and vertical magnetic intensities are read directly from these map sheets. Reference may also be made to publications that summarize the data from the Agincourt and Meanook magnetic observatories. *See* Vol. XVII, No. 2, and Vol. XXIII, No. 1 (4).

In succeeding publications the summaries of the magnetic results for Canada will comprise almost exclusively measurements made with the fluxgate portable field magnetometers. A number of these have been manufactured, tested, and proved suitable for field work. They were tried out as portable standards of reference between observatories but were not very satisfactory for this purpose owing to drifting of the constants, and the subsequent necessity to check frequently against a fixed standard (5).

For establishment of primary and secondary stations in the field the fluxgate magnetometers have now replaced dip-circles and the India survey pattern magnetometers completely. Recently, new models have been transistorized, and the design improved to reduce the effects of temperature and to stabilize the reduction coefficients.

Standardization data for the dip circles, and certain other instrumental corrections, are not published here. They are available upon request. The usual comparisons of field instruments at the Agincourt and Meanook observatories were carried out at the beginning and end of the regular field seasons. Intercomparison of standards has been practised whenever feasible.

Geographical Positions

The procedure followed has been described in previous publications. Positions were obtained from the most reliable sources possible or determined by astronomical observations on the spot. The remarks in Vol. XI, No. 7, p. 271, apply here as well. All the latitudes are north, and all longitudes are west of Greenwich.

Summary of Magnetic Observations

The stations are arranged in order of increasing westerly longitude. For each station the latitude, longitude, year to nearest tenth, declination, inclination and horizontal force are given. Total and vertical force may then be computed from the inclination and horizontal force using the formulas:

$$F = H \sec. I, \text{ or } F^2 = H^2 + Z^2.$$

$$Z = H \tan. I, \text{ or } Z = F \sin. I.$$

X and Y components may also be computed from H if required.

The Dominion Observatory is most grateful to observers of the many surveys who contributed data. Besides the Chief of the Division who supplied most of the results from 1938 to 1944, D. S. Craig, P. H. Serson, G. E. LeSueur, R. D. Hutchison, C. A. Cummings, A. E. Cameron, E. R. Niblett, W. L. W. Hannaford and K. Whitham, as well as a number of summer assistants made useful contributions. They carried out these field surveys under difficult conditions and extended the magnetic survey of Canada to all regions of the country.

Selection and Description of Stations

When stations are no longer available new ones are established in the vicinity. For purposes of annual and secular change, an exact re-occupation is necessary; therefore whenever it appears that a station is likely to become unavailable in the future owing to the growth of a town, extension of buildings or for any other reason, an auxiliary station is established near the old one and tied in to it. Thus we have stations A, B, C, ensuring continuity of the series of measurements obtained in the locality. One station will control a large area, so that many of the early stations are no longer required for secular change purposes. They have served their purpose of establishing the pattern of magnetic force on the maps, as published, and providing accurate data for provincial charts.

Attention is being given to maintenance of recording field stations near permanent recording observatories to provide check points to standardize and calibrate field instruments and to enable certain types of research investigations to be carried on. For those requiring them, descriptions of stations can be furnished on request.

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Magnetic Stations and Occupations

Abbreviations:
M.S. ..... Meteorological Service of Canada.
C.I. ..... Carnegie Institution of Washington.
T.S. ..... Topographical Survey (Canada).
U.S.C. & G.S. ..... United States Coast and Geodetic Survey.
D.O. ..... Dominion Observatory.

Station	*Location*	*Occupation*	*Remarks*
Aberdeen Lake	N.W.T.	1947	
Agincourt	Ont.	Magnetic Observatory	Toronto 1839 to 1898, established at Agincourt 1898.
Agnew River	N.W.T.	1947	
Alert Bay A	B.C.	1924, 1927, 1934	
Alert Bay B	B.C.	1934	
Algoma	Ont.	1916, 1918, 1926, 1930	No longer available.
Allen Lake	N.W.T.	1947	
Amos	Que.	1946	
Annapolis	N.S.	1912, 1918, 1925, 1931, 1936, 1940, 1945	
Arctic Bay	N.W.T.	1946	
Arctic Red River	N.W.T.	1923, 1931, 1943	
Argentia	Nfld.	1941	
Armstrong	Ont.	1914, 1918, 1927, 1930	
Arnprior	Ont.	1947	Airport site.
Assiniboia	Sask.	1927, 1930	
Atikokan	Ont.	1914, 1918, 1926, 1930, 1938	
Ayer's Cliff	Que.	1932, 1937, 1944	Eclipse Station 1932.
Baker Lake	N.W.T.	1933, 1937	M.S. Polar Year 1933.
Bancroft	Ont.	1921, 1926, 1930	
Banff A	Alta.	1907, 1908, 1911, 1919, 1927, 1930, 1935	C.I. 1907.
Banff B	Alta.	1935	
Battleford	Sask.	1907, 1911, 1919, 1927, 1930	M.S. 1907.
Battle Harbour	Labrador	1905, 1914, 1921, 1923, 1925, 1934, 1941	C.I. Station C; C.I. 1905, 1914, 1921, 1923.
Beaverton	Ont.	1947	
Belcourt	Ont.	1946	
Belleville B	Ont.	1920, 1926, 1930, 1937, 1944	
Bersimis	Que.	1907, 1920, 1925, 1931, 1935	
Black Bear Island	Ont.	1929	
Blanc Sablon	Que.	1920, 1925, 1935	
Blanc Sablon (Greenly Island)	Que.	1909, 1920, 1935	
Brandon B	Man.	1919, 1927, 1930, 1938	Originally T. S. Station.
Brochet Post	Man.	1945	
Bruderheim	Alta.	1911, 1919, 1927	
Cadillac	Que.	1946	
Calabogie	Ont.	1947	
Cambridge Bay	N.W.T.	1945, 1947	
Cameron Bay	N.W.T.	1945	
Camp 3. D.O.T.	N.W.T.	1943	
Cape Dorset	N.W.T.	1922, 1934, 1937, 1946	C.I. Station B, 1922.
Cape Hopes Advance	Que.	1928	
Cape Hopes Advance (Diana Bay)	Que.	1928	
Cape Race	Nfld.	1941	
Cape Scott	B.C.	1939	
Cape Smith	N.W.T.	1934, 1937, 1946	
Carcross	Yukon	1934	
Cartwright	Labrador	1934, 1946	
Chalk River A	Ont.	1913, 1918, 1920, 1923, 1930	
Chapleau	Ont.	1906, 1907, 1910, 1913, 1918, 1926, 1930	C.I. 1906.
Chaplin B	Sask.	1919, 1927, 1931	
Charlottetown	P.E.I.	1908, 1918, 1921, 1925, 1931, 1936, 1945	C.I. 1908.
Charlton Island	N.W.T.	1934	
Chesterfield	N.W.T.	1932, 1933, 1937, 1946	M.S. Polar Year Observatory.
Chipewyan	Alta.	1910, 1922, 1931, 1940	M.S. 1910.
Churchill B	Man.	1930, 1934, 1937	
Churchill C (Cape Merry)	Man.	1945	
Cochrane	Alta.	1927	

Magnetic Stations and Occupations—Continued

Station	*Location*	*Occupation*	*Remarks*
Cochrane A	Ont.	1913, 1914, 1918, 1926, 1928, 1936	No longer available.
Cochrane B	Ont.	1936, 1944	
Combermere	Ont.	1947	
Coppermine	N.W.T.	1945	
Coronation	Alta.	1922, 1927, 1930, 1938	
Courtenay	B.C.	1924, 1934	
Cranbrook B	B.C.	1919, 1927, 1934	No longer available.
Cranbrook C	B.C.	1934, 1938, 1942	Auxiliary for Station B.
Croker Bay	N.W.T.	1947	
Dauphin	Man.	1911, 1919, 1926, 1930, 1935	
Dawson	Yukon	1907, 1924, 1934	C.I. 1907.
Doucet A	Que.	1914, 1918, 1928	
Doucet B	Que.	1926, 1928, 1935, 1945	
Dubuisson	Que.	1946	
Dundas Harbour	N.W.T.	1934, 1946	
Dunmore	Alta.	1915, 1919, 1927, 1930, 1938	
Dunvegan	Alta.	1922, 1935	
Edson A	Alta.	1913, 1919, 1927, 1934	
Edson B	Alta.	1934	
Emerson B	Man.	1927, 1930	
Endako	B.C.	1915, 1919, 1927, 1934	
Essex	Ont.	1926, 1930, 1937, 1944, 1947	
Estevan	Sask.	1927, 1930, 1938	
Etah	Greenland	1947	
Evans Point	Ont.	1927	
Fawcett's Post	Ont.	1885, 1913, 1929	E. Fawcett 1885, C.I. 1913.
Fernie	B.C.	1946	
Fitzgerald	Alta.	1922, 1931	
Fort Albany	Ont.	1913, 1929	C.I. 1913.
Fort George (South)	B.C.	1913, 1915, 1919, 1927, 1934	
Fort Rae	N.W.T.	1945	
Fort Ross	N.W.T.	1946	
Fort St. John B	B.C.	1935	
Gander	Nfld.	1941	
Gaspé	Que.	1921, 1925, 1931, 1945	
Gladstone	Man.	1919, 1927, 1930	
Gleichen	Alta.	1911, 1919, 1927, 1930, 1938, 1942	
Goderich B	Ont.	1926, 1930, 1939, 1944	
Goldfields	Sask.	1940	
Good Hope A	N.W.T.	1943	
Goose Fiord	N.W.T.	1947	
Goose Island	B.C.	1939	
Grande Prairie	Alta.	1935	
Grant Point	Ont.	1927	
Greely Haven	N.W.T.	1947	
Grindstone	Que.	1921, 1931	
Guillemard Bay	N.W.T.	1947	
Gypsumville B	Man.	1919, 1927, 1930	
Halifax	N.S.	1915, 1911, 1912, 1918, 1925, 1931, 1936, 1940	C.I. 1905, M.S. 1911.
Harrington Harbour A	Que.	1909, 1920, 1925, 1935	
Harrington Harbour B	Que.	1935	
Havre-St-Pierre A	Que.	1909, 1920, 1935	
Havre-St-Pierre B	Que.	1920, 1925, 1935	
Havre-St-Pierre C	Que.	1935	
Hay River (Vale Point)	N.W.T.	1923, 1931	
Hearst A	Ont.	1914, 1918, 1926, 1930	No longer available.
Hearst B	Ont.	1936, 1944	
Hebron	Labrador	1937	
Hudson Bay Junction	Sask.	1911, 1919, 1927	
Huntingdon	Que.	1921, 1926, 1931, 1937, 1944, 1947	
Huntsville	Ont.	1946	

Magnetic Stations and Occupations—Continued

Station	*Location*	*Occupation*	*Remarks*
Île-à-la-Crosse	Sask.	1945	
Jasper B	Alta.	1927, 1934, 1939, 1946	
Joanne Bousquet	Que.	1946	
Jolly Lake	N.W.T.	1947	
Kamloops B	B.C.	1927, 1934	
Kamloops C	B.C.	1934, 1939, 1946	
Kettle Rapids	Man.	1923, 1935	
Kirkella	Man.	1906, 1910, 1919, 1927, 1931	C.I. 1906.
Lac Chicobi	Que.	1946	
Lacombe A	Alta.	1911, 1919, 1922, 1927, 1930, 1935, 1938, 1942	
Lac Seul	Ont.	1913, 1929	C.I. 1913.
Lake Harbour	N.W.T.	1922, 1934, 1937, 1946	C.I. 1922.
Lake St. Joseph	Ont.	1929	
Lake Temagami	Ont.	1946	
La Sarre	Que.	1946	
La Tuque C	Que.	1926, 1935	
Lloydminster A	Sask.	1911, 1919, 1927, 1935, 1940, 1946	
Longlac	Ont.	1916, 1927, 1930, 1935	
Louisburg	N.S.	1921, 1936, 1940, 1945	
Louvicourt Bridge	Que.	1946	
Macleod	Alta.	1915, 1919, 1927, 1934, 1940	
Magdalen River	Que.	1921, 1925, 1931, 1935	
Malartic	Que.	1946	
Markstay B	Ont.	1937, 1944	
Matapedia	Que.	1907, 1912, 1918, 1920, 1921, 1925, 1931, 1936, 1940, 1945	
Mattawa A	Ont.	1907, 1918, 1927, 1930, 1937	
Mattawa B	Ont.	1913, 1920, 1927, 1945	
McBride	B.C.	1913, 1919, 1927, 1934	
Meanook	Alta.	Magnetic Observatory	D.O. since 1916.
Mégantic	Que.	1947	
Melfort B	Sask.	1927, 1930, 1935	
Midway	B.C.	1915, 1919, 1927, 1934, 1938	
Mile 100, H.B.R.	Man.	1922, 1935	
Mile 200, H.B.R.	Man.	1922, 1927, 1930, 1935	
Miller Point	Ont.	1927	
Mistassini	Que.	1906, 1909, 1935	C.I. 1906, 1909.
Moncton B	N.B.	1925, 1931	
Moose Factory	Ont.	1929, 1945	
Mortier Bay A	Nfld.	1941	
Mortier Bay B	Nfld.	1941	
Mulgrave A	N.S.	1907, 1921, 1925, 1931, 1936	
Nanaimo	B.C.	1908, 1919, 1924, 1927	
Nanticoke	Ont.	1927	
Nelson	B.C.	1915, 1919, 1927, 1934	
New Liskeard A	Ont.	1913, 1918, 1926, 1934, 1944	
Noranda	Que.	1936	
Norman	N.W.T.	1923, 1931	
Normandale	Ont.	1927	
North Bay	Ont.	1946	
North Bend B	B.C.	1919, 1927, 1934, 1939	
Nottingham Island	N.W.T.	1928	
Oak Point	Man.	1916, 1919, 1927	Approximate C.I. 1908.
Ocean Falls B	B.C.	1924, 1927, 1934, 1939, 1946	
Ogoki	Ont.	1929	
Ottawa	Ont.	Annually since 1907	Several locations D.O.
Owen Sound	Ont.	1910, 1920, 1926, 1930, 1937, 1944	
Pacific	B.C.	1915, 1919, 1927, 1934	
Pangnirtung	N.W.T.	1934, 1946	
Parent	Que.	1914, 1918, 1928, 1935, 1945	

Magnetic Stations and Occupations—Continued

Station	*Location*	*Occupation*	*Remarks*
Parry Sound	Ont.	1916, 1920, 1926, 1930, 1937	
Pascalis Junction	Que.	1946	
Peace River	Alta.	1922, 1935, 1938	
Peacock Point	Ont.	1927	
Pense	Sask.	1910, 1919, 1927, 1931	
Penticton	B.C.	1915, 1919, 1927, 1934, 1938, 1946	
Point Lake	N.W.T.	1947	
Pond Inlet	N.W.T.	1934, 1946	
Port Burwell	N.W.T.	1928, 1934, 1937	Near C.I. Station B of 1914.
Port Colborne B	Ont.	1926, 1930, 1937, 1944	
Port Dover	Ont.	1927	
Port Harrison	Que.	1934, 1937, 1946	
Port Leopold	N.W.T.	1947	
Port Maitland	Ont.	1927	
Port Ryerse	Ont.	1927	
Port Stanley B	Ont.	1926, 1930, 1937, 1944, 1947	
Powell Rouyn	Que.	1946	
Prairie Point	Alta.	1938	
Prince Albert	Sask.	1907, 1908, 1910, 1911, 1919, 1927, 1930, 1935, 1940, 1946	M.S. 1907, C.I. 1908, T.S.1910.
Prince Rupert	B.C.	1915, 1919, 1924, 1927, 1934, 1946	
Quebec A	Que.	1906, 1909, 1913, 1913, 1914, 1918, 1920, 1926, 1928, 1931	C.I. 1906.
Quebec B	Que.	1928, 1931, 1935, 1937, 1945	
Rainy River B	Ont.	1918, 1927, 1930	No longer available.
Rainy River C	Ont.	1938	
Redditt	Ont.	1914, 1918, 1926, 1930	
Reliance	N.W.T.	1945	
Repulse Bay	N.W.T.	1937	
Resolute Bay A	N.W.T.	1947	
Resolute Bay B	N.W.T.	1946	
Resolution B	N.W.T.	1922, 1931, 1943	Also known as Fort Resolution.
Resolution Island	N.W.T.	1928	
River Clyde	N.W.T.	1946	
Riverton B	Man.	1927, 1930	
Rivière-aux-Écorces	Que.	1932	Eclipse Station.
Rivière-du-Loup B	Que.	1918, 1920, 1926, 1931, 1937, 1945, 1947	
Roberval B	Que.	1926, 1935, 1945, 1947	
Rosetown	Sask.	1922, 1927, 1930, 1935, 1940, 1946	
Ste-Anne-des-Monts	Que.	1925, 1931	
Saint-Dominique	Que.	1946	
Saint John	N.B.	1907, 1912, 1918, 1926, 1931	
Saint John Harbour	B.C.	1939	
Saint John's	Nfld.	1941	
Ste-Justine	Que.	1947	
St-Michel-des-Saints	Que.	1947	
St-Pamphile	Que.	1947	
Sault Ste. Marie	Ont.	1916, 1918, 1926, 1930, 1937, 1945	
Savoff A	Ont.	1928, 1930, 1936	
Savoff B	Ont.	1928	
Schreiber	Ont.	1906, 1910, 1918, 1926, 1930	C.I. 1906.
Selkirk	Yukon.	1907, 1924, 1934	
Seven Islands	Que.	1920, 1925, 1935	
Shawinigan Falls	Que.	1947	
Shelburne	N.S.	1941	Naval Station.
Sicamous B	B.C.	1915, 1919, 1927, 1934, 1938	
Simpson A	N.W.T.	1910, 1923, 1931	M.S. 1910.
Sioux Lookout B	Ont.	1918, 1926, 1929, 1936	
Slidre Bay	N.W.T.	1947	
Smithers	B.C.	1915, 1919, 1927, 1934, 1939, 1946	
Southampton Islands	N.W.T.	1934, 1946	
Spragge	Ont.	1947	
Squamish A	B.C.	1924, 1934	
Squamish B	B.C.	1934	
Stanstead	Que.	1921, 1926, 1931	

Magnetic Stations and Occupations—Concluded

Station	*Location*	*Occupation*	*Remarks*
Stewart	B.C.	1924, 1927, 1934	
Stewart	Yukon	1907, 1924, 1934	C.I. 1907.
Stony Rapids	Sask.	1945	
Sudbury C	Ont.	1916, 1919, 1926, 1930, 1937, 1946	
Swan River A	Man.	1911, 1919, 1927, 1930, 1935, 1942	
Swift Current	Sask.	1911, 1919, 1927, 1930	
Sydney B	N.S.	1918, 1921, 1925, 1931	
Tantalus	Yukon	1907, 1924, 1934	
Taschereau	Que.	1914, 1918, 1928, 1936, 1945	
Tasekyoah Lake	N.W.T.	1947	
The Forks (Albany River)	Ont.	1929	
The Pas A	Man.	1908, 1919, 1922, 1927, 1930, 1935	C.I. 1908.
The Pas B	Man.	1935, 1937, 1945	
Three Rivers B	Que.	1928	
Tignish	P.E.I.	1921, 1925, 1931, 1940	
Triangle Island	B.C.	1939	
Truro	N.S.	1907, 1912, 1918, 1920, 1925, 1931	
T.S. Monument 56N	N.W.T.	1923, 1931	
Turkey Point	Ont.	1927	
Twin City Junction B	Ont.	1916, 1918, 1926, 1930, 1938, 1945	
Val d'Or	Que.	1946	
Vancouver	B.C.	1908, 1915, 1919, 1924, 1927	No longer available.
Vegreville	Alta.	1911, 1919, 1927	
Victoria	B.C.	1907, 1908, 1919, 1924, 1927	C.I. 1907 near U.S. C.G.S. 1903.
Victoria (Mt. Douglas)	B.C.	1924, 1927, 1934, 1939, 1946	
Victoria (Observatory)	B.C.	1946	D.O. Royal Oak.
Wabamun A	Alta.	1913, 1919, 1927	
Wabamun B	Alta.	1927	
Wakeham Bay	Que.	1928, 1937	
Warman	Sask.	1911, 1919, 1927	
Whitehorse	Yukon	1907, 1924, 1934	C.I. 1907.
White River B	Ont.	1918, 1926, 1930, 1938	No longer available.
White River C	Ont.	1938, 1945	
Winnipeg	Man.	1906, 1907, 1908, 1910, 1911, 1913, 1914, 1915, 1916, 1918, 1919, 1927, 1936, 1938, 1945	C.I. 1906–08. D.O. 1908.
Wolseley B	Sask.	1919, 1927	No longer available.
Wolstenholme (Eric Cove)	Que.	1934, 1937, 1946	
Woodstock B	N.B.	1926, 1931, 1936, 1940, 1945	
Wrigley A	N.W.T.	1923, 1931	
Yarmouth	N.S.	1912, 1925, 1931	
Yellowknife	N.W.T.	1947	Airport Station.

Magnetic Observations

Station	Lat.		Long.		Date	Declination Value		Inclination Value North		Horizontal Intensity Value
	°	′	°	′		°	′	°	′	γ
						West				
St. John's	47	31.8	52	45.0	1941.6	29	09.4	72	40.1	15927
Cape Race	46	39.4	53	04.2	1941.5	28	03.8	72	17.9	16233
Argentina	47	19.4	54	05.2	1941.7	29	58.0	72	34.9	16318
Gander	48	55.5	54	34.4	1941.7	29	32.8	74	24.1	14535
Mortier Bay A	47	11.1	55	05.2	1941.6	28	39.5	72	59.2	15709
Mortier Bay B	47	11.5	55	08.5	1941.5	31	02.2	72	47.2	15935
Battle Harbour	52	16.4	55	35.4	1941.6	33	15.9	75	26.9	13659
Cartwright	53	42.4	57	05.0	1946.5	34	18.4	76	49.5	12537
Louisburg (Lighthouse)	45	54.2	59	57.9	1940.7	26	45.9	73	43.9	15409
Louisburg (Lighthouse)	45	54.2	59	57.9	1945.6	26	34.0	73	37.2	15533
Charlottetown	46	14.0	63	07.4	1945.7	24	48.2	74	23.3	15162
Halifax	44	37.6	63	34.5	1940.7	22	59.2	73	34.2	15725
Tignish	46	56.4	64	02.0	1940.7	25	07.7	75	15.9	14326
Gaspé	48	49.9	64	29.4	1945.7	20	01.8	75	48.3	13925
Shelburne	43	44.8	65	19.8	1941.9	21	13.4	73	33.2	15744
Annapolis	44	45.0	65	31.2	1940.7	22	12.3	73	48.4	15628
Annapolis	44	45.0	65	31.2	1945.7	22	06.5	73	39.0	15724
Pangnirtung	66	08.7	65	44.3	1946.7	54	44.0	83	28.4	06531
Matapedia	47	58.5	66	57.8	1940.7	24	11.3	76	03.2	13712
Matapedia	47	58.5	66	57.8	1945.6	24	02.8	75	58.6	13802
Woodstock B	46	09.6	67	34.6	1940.8	21	31.9	75	13.5	14508
Woodstock B	46	09.6	67	34.6	1945.7	21	23.2	75	09.0	14585
River Clyde	70	27.2	68	34.6	1946.7	60	05.3	84	40.1	05297
Rivière-du-Loup	47	51.6	69	34.0	1945.7	22	29.1	76	10.1	13856
Rivière-du-Loup	47	51.6	69	34.0	1947.6	21	57.4	76	06.8	13835
St-Pamphile	46	58.0	69	46.9	1947.6	20	53.3	75	49.0	14063
Lake Harbour	62	50.7	69	52.0	1946.5	46	53.7	82	47.3	07237
Ste-Justine	46	25.0	70	21.3	1947.6	20	05.5	75	38.6	14265
Mégantic	45	34.0	70	53.5	1947.6	18	28.2	75	19.3	14494
Quebec B	46	48.0	71	15.0	1945.6	19	38.6	75	38.1	14333
Ayer's Cliff	45	09.6	72	01.5	1944.5	17	17.4	75	02.7	14825
Ayer's Cliff	45	09.6	72	01.5	1947.6	17	08.8	75	01.3	14842
Mistassini	48	54.5	72	13.1	1947.6	20	38.2	77	44.4	12419
Roberval	48	32.1	72	13.6	1945.6	19	57.6	76	57.6	13240
Roberval	48	32.1	72	13.6	1947.6	19	53.4	76	57.9	13238
Etah	78	18.9	72	44.0	1947.6	91	03.9	86	12.5	03682
Shawinigan Falls B	46	33.8	72	44.9	1947.6	16	09.6	75	59.3	14173
St-Michel-des-Saints	46	41.0	73	55.4	1947.6	11	08.0	76	17.2	15272
Huntingdon	45	05.6	74	10.0	1944.5	14	24.5	75	51.9	14381
Huntingdon	45	05.6	74	10.0	1947.6	14	14.5	75	49.6	14369
Parent	47	55.4	74	37.6	1945.7	16	21.9	77	18.9	12892
Ottawa B	45	15.0	75	42.5	1938.5	13	23.5	75	49.3	14214
Ottawa B	45	15.0	75	42.5	1939.5	13	23.4	75	48.5	14198
Ottawa B	45	15.0	75	42.5	1940.5	13	23.6	75	48.2	14205
Ottawa B	45	15.0	75	42.5	1941.5	13	23.8	75	48.4	14192
Ottawa B	45	15.0	75	42.5	1942.5	13	21.5	75	48.3	14192
Ottawa A	45	23.6	75	43.0	1938.5	14	28.2	75	34.5	14504
Arnprior	45	25.0	76	22.1	1947.7	13	10.7	75	39.9	14454
Cape Dorset B	64	13.6	76	34.0	1946.6	15	48.4	84	44.3	05368
Doucet B	48	13.6	76	35.3	1945.7	15	06.0	77	22.8	12918
Calabogie	45	15.4	76	38.1	1947.7	13	07.5	75	37.0	14515
Pembroke	45	49.3	77	07.0	1946.7			76	10.9	12918
Belleville B	44	07.1	77	22.6	1944.5	10	33.8	74	58.1	14930
Louvicourt Bridge	48	04.0	77	23.0	1946.6			77	29.0	12820
Wolstenholme	62	31.9	77	23.9	1946.6	35	37.7	83	24.3	06855
Belcourt	48	25.0	77	25.0	1946.6			77	50.5	12446
Pascalis Junction	48	06.0	77	33.0	1946.6			77	41.0	12602
Combermere	45	21.0	77	36.6	1947.7	10	42.0	75	47.7	14447
Val d'Or	48	06.0	77	48.0	1946.6			76	51.0	13593
Dubuisson	48	06.0	77	54.0	1946.6			77	20.3	12932
Pond Inlet	72	41.7	77	58.3	1946.7	76	31.3	86	22.5	03601
Amos	48	34.0	78	06.4	1946.6	13	28.4	77	39.9	12666
Malartic	48	08.8	78	07.8	1946.6	14	16.0	77	57.9	12332

Magnetic Observations—Continued

Station	Lat.		Long.		Date	Declination Value		Inclination Value North		Horizontal Intensity Value
	°	′	°	′		°	′	°	′	γ
						West				
St-Dominique	48	50.0	78	08.0	1946.6			77	56.2	12416
Port Harrison	58	27.3	78	08.5	1946.6	31	39.7	82	59.6	07639
Cadillac	48	14.0	78	19.0	1946.7			74	40.3	15864
Cape Smith	60	44.3	78	28.2	1946.6	34	32.4	83	55.8	06263
Lac Chicobi	48	51.0	78	30.0	1946.7			78	06.7	12190
Joanne Bousquet	48	13.0	78	39.0	1946.7			77	38.7	12666
Belleterre	47	20.0	78	41.0	1946.7			77	42.8	12548
Taschereau	48	40.2	78	41.1	1945.7	13	29.1	77	53.5	12472
Mattawa B	46	19.5	78	42.7	1945.8	10	30.5	76	34.4	13729
Powell-Rouyn	48	16.0	79	04.0	1946.6			78	04.0	12254
La Sarre	48	47.0	79	10.0	1946.8			78	00.1	12339
Beaverton	44	25.6	79	10.6	1947.7	09	12.8	75	09.2	15075
Huntsville	45	21.0	79	13.0	1946.7			75	50.7	14413
Agincourt	43	47.0	79	16.0	1938.5	07	35.1	74	51.3	15310
Agincourt	43	47.0	79	16.0	1939.5	07	33.8	74	51.7	15292
Agincourt	43	47.0	79	16.0	1940.5	07	32.3	74	52.0	15281
Agincourt	43	47.0	79	16.0	1941.5	07	32.4	74	51.5	15288
Agincourt	43	47.0	79	16.0	1942.5	07	31.4	74	50.0	15303
Agincourt	43	47.0	79	16.0	1943.5	07	30.8	74	49.8	15308
Agincourt	43	47.0	79	16.0	1944.5	07	30.1	74	48.6	15314
Agincourt	43	47.0	79	16.0	1945.5	07	27.7	74	48.0	15322
Agincourt	43	47.0	79	16.0	1946.5	07	25.5	74	48.1	15311
Agincourt	43	47.0	79	16.0	1947.5	07	22.3	74	46.7	15338
Port Colborne B	42	52.6	79	17.6	1944.6	07	28.9	74	12.5	15801
Port Colborne B	42	52.6	79	17.6	1947.7	07	23.2	74	13.2	15818
North Bay	46	18.8	79	26.0	1946.7			76	32.5	13769
New Liskeard A	47	30.6	79	40.4	1944.5	10	21.4	77	21.0	12954
New Liskeard A	47	30.6	79	40.4	1946.7			77	21.8	12924
Lake Temagami	47	04.0	79	47.0	1946.7			75	36.1	14890
Markstay B	46	30.6	80	32.7	1944.5	09	06.4	76	23.0	13934
Moose Factory	51	15.2	80	37.2	1945.7	18	25.5	80	07.1	10408
Owen Sound	44	33.8	80	53.8	1944.6	07	19.4	75	18.6	14892
Sudbury	46	30.9	80	59.6	1946.7			76	23.7	13936
Cochrane B	49	04.2	81	01.9	1944.5	10	41.0	78	10.9	12232
Port Stanley B	42	40.4	81	14.5	1944.6	04	04.1	74	26.2	15637
Port Stanley B	42	40.4	81	14.5	1947.7	03	55.2	74	24.6	15648
Goderich B	43	44.9	81	42.9	1944.6	05	55.9	74	41.0	15504
Dundas Harbour	74	31.3	82	23.9	1946.7	96	42.0	86	56.4	03065
Essex	42	10.4	82	49.9	1944.7	03	01.7	73	34.1	16505
Essex	42	10.4	82	49.4	1947.7	02	53.3	73	34.6	16495
Southampton Island	64	07.8	83	09.7	1946.6	40	57.0	85	42.5	04462
Croker Bay	74	32.3	83	35.0	1947.6	88	02.9	87	19.4	02800
Hearst B	49	41.1	83	40.1	1944.6	08	34.3	78	37.5	11873
Sault Ste. Marie	46	30.9	84	17.8	1945.7	04	32.4	76	50.9	13608
Arctic Bay	73	02.4	85	11.9	1946.7	85	09.8	87	27.3	02556
White River C	48	35.5	85	16.5	1938.5	05	25.6	78	05.8	12440
White River C	48	35.5	85	16.5	1945.7	05	14.3	78	01.8	12400
Slidre Bay	79	59.2	85	56.2	1947.6	09	24.4	87	24.6	02532
Goose Fiord	76	26.4	88	33.9	1947.6	94	38.5	88	33.9	01964
						East				
Twin City Jct. A	48	22.3	89	25.0	1938.5	01	08.9	77	44.4	12847
Twin City Jct. C	48	22.3	89	25.0	1939.5	01	11.5	77	46.6	12830
Twin City Jct. C	48	22.3	89	25.0	1945.7	01	16.5	77	39.4	12925
						West				
Port Leopold	73	52.6	90	17.4	1947.6	94	45.6	88	24.3	01668
Chesterfield B	63	20.3	90	42.5	1946.6	11	24.1	86	07.1	04080
						East				
Atikokan	48	45.3	91	37.1	1938.5	03	30.4	77	29.7	13123
						West				
Agnew River	70	38.0	92	35.3	1947.6	55	27.4	88	31.9	01527

Magnetic Observations—Continued

Station	Lat.		Long.		Date	Declination Value		Inclination Value North		Horizontal Intensity Value
	°	′	°	′		°	′	°	′	γ
						East				
Fort Ross	71	59.7	94	11.0	1946.8	38	03.8	89	17.3	00722
Churchill C	58	45.0	94	14.0	1945.5	03	47.6	84	05.7	06318
Rainy River C	48	43.3	94	35.0	1938.6	07	25.6	77	23.2	13258
						West				
Resolute Bay A	74	41.2	94	49.9	1947.6	101	14.5	89	03.8	00893
Resolute Bay B	74	41.1	94	53.4	1947.7	105	29.4	88	57.3	01087
Tasekyoah Lake	68	41.6	96	39.6	1947.6	11	42.4	88	27.2	00612
						East				
Winnipeg	49	51.9	97	07.7	1938.8	11	36.2	78	06.4	12643
Winnipeg	49	51.9	97	07.7	1945.6	11	22.1	77	57.6	12780
						West				
Freeman's Cove	75	11.5	98	03.9	1947.7	128	52.8	89	20.4	00677
Guillemard Bay	71	51.3	98	18.3	1947.6	38	35.7	89	31.6	00488
Allen Lake	73	41.0	98	26.9	1947.6	124	54.3	89	35.6	00412
						East				
Aberdeen Lake	64	38.9	99	34.8	1947.6	17	34.7	86	36.2	03589
Brandon B	49	52.0	99	59.0	1938.7	12	52.9	77	29.3	13259
						West				
Peddie Bay	75	11.0	100	39.0	1947.7	148	17.3	89	34.0	00438
						East				
The Pas B	53	50.0	101	14.0	1945.6	15	15.4	79	48.2	10814
Swan River A	52	06.8	101	15.5	1942.7	15	46.8	78	54.5	11843
Brochet Post	57	53.2	101	40.8	1945.7	16	29.6	82	26.8	08116
Estevan 49	49	08.8	102	59.2	1947.6	15	44.8	76	16.0	14360
Greely Haven	71	56.0	104	50.0	1947.6	61	39.5	88	29.4	00970
Cambridge Bay	69	07.2	104	57.2	1945.6	35	09.0	87	43.1	02425
Cambridge Bay	69	07.2	104	57.2	1947.6	36	11.1	87	37.7	02466
Prince Albert	53	11.7	105	47.9	1940.6	20	31.4	79	08.1	11566
Prince Albert	53	11.7	105	47.9	1946.8	19	56.4	79	08.1	11665
Assiniboia	49	38.2	105	59.1	1938.7	17	36.1	75	47.4	14996
Stony Rapids	59	14.8	105	53.2	1945.6	25	34.4	82	45.4	07690
Chaplin B	50	28.0	106	39.5	1938.7	19	09.4	76	37.6	14045
Île-à-la-Crosse	55	27.3	107	53.6	1945.7	22	25.4	79	40.1	10926
Rosetown	51	33.8	107	59.7	1940.6	20	46.1	76	59.0	13714
Rosetown	51	33.8	107	59.7	1946.5	20	21.7	76	57.4	13848
Goldfields	59	27.7	108	30.7	1940.6	24	57.8	82	08.7	08339
Reliance	62	42.2	109	09.7	1945.6	33	57.0	83	53.8	06507
Lloydminster A	53	17.4	110	00.0	1940.6	23	02.2	78	00.4	12625
Lloydminster A	53	17.4	110	00.0	1946.8	22	31.5	78	03.7	12700
Dunmore	49	58.5	110	35.6	1938.7	20	23.0	75	24.1	15144
Chipewyan	58	42.7	111	08.8	1940.5	25	19.3	81	01.8	09507
Coronation	52	06.5	111	26.8	1938.6	22	40.4	76	31.7	14109
Jolly Lake	64	07.8	112	04.2	1947.7	35	38.0	84	03.7	06256
Gleichen	50	52.2	113	03.3	1938.6	22	52.1	75	27.6	15117
Gleichen	50	52.2	113	03.3	1942.7	22	36.0	75	25.4	15135
Meanook*	54	37.0	113	20.0	1938.5	25	54.8	77	52.7	12726
Meanook	54	37.0	113	20.0	1939.5	25	51.6	77	53.2	12710
Meanook	54	37.0	113	20.0	1940.5	25	45.0	77	52.6	13719
Meanook	54	37.0	113	20.0	1941.5	25	38.7	77	52.5	12717
Meanook	54	37.0	113	20.0	1942.5	25	33.6	77	51.8	12729
Meanook	54	37.0	113	20.0	1943.5	25	29.3	77	51.8	12724
Meanook	54	37.0	113	20.0	1944.5	25	22.3	77	50.2	12752
Meanook	54	37.0	113	20.0	1945.5	25	16.1	77	49.7	12753
Meanook	54	37.0	113	20.0	1946.5	25	10.4	77	50.1	12792
Meanook	54	37.0	113	20.0	1947.5	25	02.2	77	48.6	12790
MacLeod	49	43.1	113	24.4	1940.6	22	12.9	74	32.1	15939
Resolution Bay	61	10.2	113	40.5	1943.6	35	49.3	81	56.0	08528
Point Lake	65	21.1	113	41.6	1947.7	40	25.8	84	17.2	05979
Lacombe A	52	27.6	113	45.0	1938.6	24	23.9	76	25.1	14137

Magnetic Observations—Concluded

Station	*Lat.*		*Long.*		*Date*	*Declination Value*		*Inclination Value North*		*Horizontal Intensity Value*
	°	′	°	′		°	′	°	′	γ
						East				
Lacombe A	52	27.6	113	45.0	1942.7	24	03.0	76	22.6	14157
Yellowknife	62	28.6	114	26.3	1947.6	33	23.3	82	30.9	07754
Fernie	49	30.2	115	04.0	1946.7	22	20.2	73	44.5	16632
Coppermine	67	48.8	115	09.2	1945.6	47	14.2	85	13.4	05016
Cranbrook C	49	31.0	115	46.5	1938.7	23	23.1	73	29.9	16762
Cranbrook C	49	31.0	115	46.5	1942.7	23	07.7	73	27.5	16765
Fort Rae	62	49.4	116	05.4	1945.5	35	51.8	82	41.2	07734
Prairie Point	58	15.6	116	28.6	1938.6	32	22.6	79	43.2	10826
Peace River	56	13.8	117	17.5	1938.6	29	42.7	78	09.1	12413
Cameron Bay	66	03.7	117	45.9	1945.6	44	27.5	83	45.3	06443
Jasper B	52	53.5	118	04.0	1939.5	25	58.6	75	28.7	14936
Jasper B	52	53.5	118	04.0	1946.7	25	28.0	75	29.7	14996
Midway	49	00.5	118	46.8	1938.7	23	29.8	72	18.3	17686
Sicamous B	50	50.3	118	58.4	1938.7	24	47.0	73	50.6	16354
Penticton	49	29.3	119	35.5	1938.7	24	36.2	72	38.2	17481
Penticton	49	29.3	119	35.5	1946.7	24	06.3	72	39.2	17541
Kamloops C	50	40.8	120	19.7	1939.5	24	47.6	73	13.7	16720
Kamloops C	50	40.8	120	19.7	1946.7	24	22.3	73	15.0	16722
North Bend B	49	52.7	121	25.8	1939.5	24	57.2	72	28.5	17501
Victoria (Mt. Douglas)	48	29.1	123	19.0	1939.5	23	59.2	70	55.7	18613
Victoria (Mt. Douglas)	48	29.1	123	19.0	1946.6	23	35.1	70	56.1	18683
Victoria (Observatory)	48	31.3	123	25.0	1946.6	23	21.7	70	50.9	18678
Smithers	54	46.7	127	09.3	1939.6	28	45.5	74	56.6	15147
Smithers	54	46.7	127	09.3	1946.6	28	22.5	74	57.3	15193
Ocean Falls B	52	21.3	127	40.3	1939.6	26	25.1	73	07.2	16628
Ocean Falls C	52	21.3	127	40.3	1946.6	25	53.2	73	08.2	16653
Cape Scott	50	46.2	128	24.6	1939.6	26	07.8	71	29.1	18245
Goose Island	52	00.2	128	24.9	1939.5	26	23.9	72	00.2	17870
St. John Harbour	52	11.3	128	30.1	1939.5	28	16.7	73	04.8	17041
Good Hope A	66	15.5	128	38.3	1943.7	39	22.9	81	39.5	08591
Camp 3 DOT	66	27.7	129	01.3	1943.7	41	52.3			
Triangle Island	50	52.2	129	04.7	1939.6	26	03.3	71	17.1	18172
Prince Rupert B	54	18.2	130	19.6	1939.6	28	25.2	73	33.5	16223
Prince Rupert C	54	18.2	130	19.6	1946.6	27	52.8	73	02.3	18406
Arctic Red River	67	26.7	133	44.2	1943.7	42	58.8	81	47.0	08450

Dominion Observatory,
Ottawa, Canada.
February, 1963.