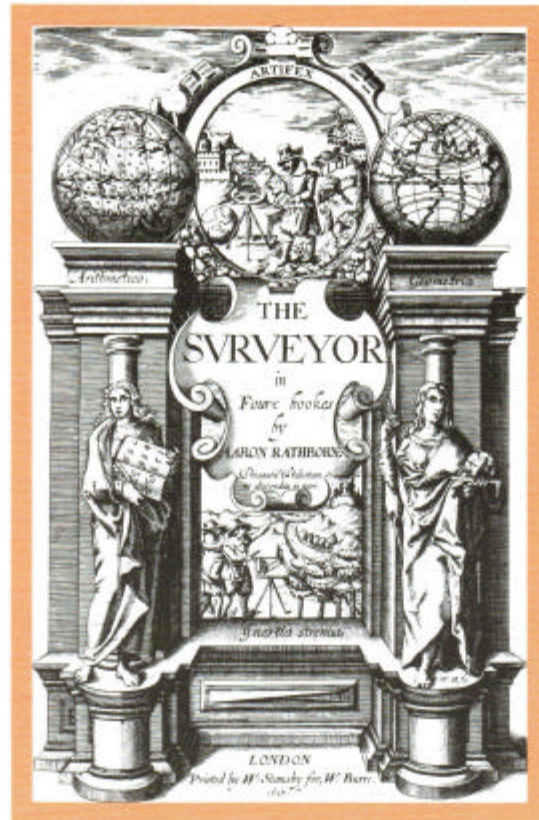


SIGNIFICANT DATES IN CANADIAN



SURVEYING MAPPING AND CHARTING

CANADIAN
INSTITUTE
OF
GEOMATICS



ASSOCIATION
CANADIENNE
DES SCIENCES
GÉOMATIQUES

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Significant Dates in Canadian Surveying Mapping and Charting

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Cover

Title-page from Aaron Rathborne, *The surveyor* (London, 1616), illustrating the altazimuth theodolite and the planetable.

Introduction

In compiling this text we have tried to include all the important events that have occurred in the surveying, mapping and charting of Canada from the earliest records to the present. Most Canadians know of these events but few can state the exact year in which they occurred. Even in quite recent history, the dates of important events become vague in memory. For example, it is a well known fact that the federal Surveys and Mapping Branch was formed by bringing together the various government survey agencies, but exactly when did this happen?

But this publication is much more than a handy date-finder. By listing events in chronological order it is possible to see what was going on in Canada, in our professions, at any given time. How many realize that in about one year's time (1777-78) DesBarres' *Atlantic Neptune* was published, Philip Tumor started surveying Hudson's Bay Company lands, and Captain Cook started charting Canada's west coast? Many other striking examples of contemporary events can be found.

Certain limits have had to be placed on the events that would be entered into the lists. It was decided early on that references to thematic mapping could not be included. The development of Canada's geological, forestry and soils surveying and mapping has been of vital importance to Canada's economy, but to include data on such work would more than double the size of this text. We also decided to play down biographical references. Few birth dates are given and no dates of deaths.

At the end of each entry there is a code indicating one or more publications in which additional information can be found. This reading list has been selected with care. Most of the publications can be found in a university library, and many are also on the stacks of municipal reference libraries. Each of the texts has its own list of references and footnotes, so the net to find additional data is cast even farther.

The reference code is simple. Each of the reference publications is given a number from 1 to 45. When a text or journal is referenced, the code starts with this number. If it is a book, this number is followed by the page on which the required information is to be found; if the reference is to a journal, its number is followed by the volume and number of the reference and, if required, a page number. In the case of the *Canadian Encyclopedia*, two editions are in wide circulation in Canada, so page references could not be used. In this case the *Encyclopedia's* reference word is given (for example, "3 under Cartography").

All provinces and several federal departments were sent drafts of the text and all were encouraged to submit events that they considered important in their surveying and mapping. These have in most cases been included, but even with this substantial support we may have missed items that should have been entered. There will in time be a second edition of this work, so comments on its coverage are requested.

Finally we would like to thank those tireless researchers who have preceded us in writing in this field and in doing so have made our work much easier. In particular we must mention Don Thomson, John Ladell and the late Rolland Pelletier.

Angus Hamilton

Lou Sebert

Significant Dates in Canadian Surveying Mapping and Charting

985	Bjarni Herjolfsson, blown off course during a trip to Greenland, makes a landfall somewhere along the coast of Newfoundland or Labrador, then he coasts northward. He probably used the elevation of the pole-star to judge his latitude. (3 under Bjarni Herjolfsson)	1576	Martin Frobisher discovers and explores Frobisher Bay. (3 under Frobisher)
c.1000	Lief Ericsson and other Greenland Norse skip-pers explore Labrador and possibly the Gulf of St Lawrence. (3 under Lief Ericsson)	1578-79	Sir Francis Drake coasted north to approximately 48° north latitude in the Pacific Ocean. He may have sighted Vancouver Island. (3 under Drake)
c.1400	Estimated date of the Vinland Map. If it is authentic it is the oldest known map to show a part of Canada. (6 42-4)	1579	Martin de Hoyarsabal publishes his "Voyages Adventureux", the first rutter (an early form of nautical chart) for Canada's east coast waters. (25 Newfoundland)
1497	John Cabot makes his landfall somewhere in Atlantic Canada. His map has not survived (3 under Cabot)	1592	The terrestrial globe of Emery Molyneux includes results of explorations of John Davis into Davis Bay. (19 p.3)
1500-1	Caspar Corte-Real explores the east coast of Newfoundland and possibly Labrador. (3 under Cartography)	1603	Champlain visits the St Lawrence Valley as a member of the expedition led by Francois Grave. He records "copious notations". (10 p. 1)
1510-20	Juan de la Cosa draws a map of the world embodying the cartographic record of Cabot. If the Vinland Map is not accepted, this is the oldest known map to show a part of Canada. (3 under Cartography)	1604	Champlain maps east coast of North America from Canso to Nantucket. (10 p.2)
1534-35	Jacques Cartier (1491-1557) heads an expedition to what is now Canada. He returns in 1535 and 1541. He may have been in Canada with Verrazzano in 1524 or 1528. He may have used the cross-staff for latitude observations. (3 under Cartier)	1605-6	Champlain continues his east coast exploration. (10p.4)
1541	Nicolas Desliens' map shows Newfoundland as a cluster of islands. (26 p. 1)	1607	Champlain publishes his map of Gulf of Maine and Bay of Fundy. (10p.11)
1542	John Rotz' map, drawn this year, thought to be one of the better depictions of data from Carder's lost maps. (3 under Cartography)	1609	Galileo invents the telescope. The telescope was used for early longitude observations in Canada by observing the immersion and emersion of the moons of Jupiter. (7 p.59 and 20 p.6)
1544	Pierre Desceliers' manuscript map of North America includes a number of Newfoundland place names but retains a Newfoundland divided into several islands. (26)	1610	Henry Hudson discovers Hudson and James Bay. His maps have not survived. (3 under Hudson and 21-1 p.164)
c.1547	Harleian Map is the first map to use the name Canada. (3 under Canada)	1612	The Gerritsz chart of Hudson Bay includes Hudson's discoveries. (19 p.3 and 21-1 p.62)
1560-90	European cartographers evolve a generally accurate representation of Newfoundland as a single island, notably Desliens' "Mappemonde" of 1560 and Bartolomeu Lasso's manuscript charts of 1575-90. (26 p.2-5)	1612	Sir Thomas Button is the first European to set foot on what is now Manitoba. (3 under Button)
		1613	Champlain makes the first successful attempt to lay down latitudes and longitudes for a map of part of Canada in his 1613 map of the Atlantic Coast. (10 p. 68 and Plate 3)
		1615-16	Champlain explores the Ottawa, Madawaska, and Trent River systems. He makes numerous observations for latitude, and estimates his longitude by dead reckoning. (10 p.25)
		1624	Sir William Alexander's map of the Northwest Atlantic in his <i>An Encouragement to Colonies</i> shows the Grand Banks. (26 p. 12)

1631-32	During the winter of 1631-2 Captain Thomas James and his expedition camped on Charlton Island in James Bay. While there he observed a lunar eclipse which was observed simultaneously by Professor Henry Gellibrand at Gre-sham College in London. From the observations Gellibrand calculated the longitude of Charlton Island to be 79° 30' which is essentially correct. This was the first successful astronomic observation for longitude in Canada. (7 p.57 and 28 p.34)	1675	John Seller's <i>Atlas Maritimus</i> is published. It contains Captain Henry Southwood's two charts of Newfoundland's English Shore: "The Coast of Newfoundland from Salmon Cove to Cape Bonavista" and "Cape Race to Cape St Francis". These are the first large-scale charts of Newfoundland, naming over 150 ports and features. (25)
1632	Champlain publishes his last map. (10 p.34)	1676	From this year on, Jupiter's satellites are used extensively world wide for longitude determination. (20 p.6)
1634	Jean Bourdon, said to be the true successor of Champlain's mapping efforts, arrives in New France. He is a trained surveyor, and has the title of <i>Ingenieur de la Compagnie de Nouvelle France</i> . (2 pp. 9-129)	1679	The first issue of <i>Connoissance de Temps</i> by Abbe Jean Picard appeared in this year. This is the oldest of the national ephemerides. (16)
1635-60	Between 1635 and 1660 Jean Bourdon conducted many surveys of seigneuries and other large-scale mapping in support of public works in New France. He also was active in small-scale mapping (e.g. the <i>Chemin des Iroquois</i> map and the so-called Bourdon map) and is the probable author of the famous map "Nouvelle France" in 1641. (2 p. 13, 6 25-3 p.67)	1679	La Salle launches the <i>Griffin</i> on Cayuga Creek, above Niagara Falls. This was the first sailing vessel on the Great Lakes, and was used by La Salle to explore Lake Erie and the western shore of Lake Michigan. (28 p.41)
1641	The map "Nouvelle France" is compiled from data taken from Champlain's maps, a Huron Map acquired by Father Paul Ragueneau and information supplied by travellers into Mohawk country. This map is one of the few of the Eastern Great Lakes drawn between 1632 and Sanson's map of 1650 that is not a direct copy of Champlain's work. (6 25-3 p.67)	1686	Jean Deshayes measures the first baseline for a triangulation survey in Canada. It ran from Lower Town Quebec across the ice to <i>Pointe Levis</i> . This was the start of the survey of the St Lawrence from Quebec to what is now <i>Sept-Ilies</i> . The survey necessitated the reading of about 300 triangles. (2 p.223 and 17, LVI No.1)
1666	Robert Hooke reports his development of "a perspective for observing the positions of stars from the moon by reflection." This gave Hadley the idea for his quadrant. Both quadrant and sextant were used extensively in Canadian mapping. (4 35-4 p.405 and 20 p.7)	1689	Southwood's charts are combined by John Thornton and published as "The Trading Part of Newfoundland" and given wide dissemination in the first edition of <i>The English Pilot</i> . (25)
1670	The Governor and Company of Adventurers of England Trading into Hudson's Bay are granted, by King Charles II, wide powers including trading rights in the territory traversed by rivers flowing into Hudson Bay. This vast region was named Rupert's Land. (3 under Hudson's Bay Company)	1690	Predictions of eclipses of Jupiter's first satellite are included in <i>Connoissance de Temps</i> for first time. (20 p.6)
1670-71	The first map showing the entire Lake Superior is included in Father Claude Dablon's <i>Relations</i> of 1670-71. (28 p.39)	1690-92	Henry Kelsey explores inland to the prairies seeking trade with the Indians. (3 under Kelsey)
1671	Jean-Baptiste Louis Franquelin begins production of maps and charts of New France. (2 p. 195, 3 under Franquelin and 21-1 p.51)	1700	The circumferenter (i.e. a compass with sight vanes) becomes the standard instrument for land survey in Canada. (7 p.41 et seq)
		1702	"Carte de la Riviere de St. Laurens", surveyed by Deshayes in 1686 is published by Deshayes. This is the first printed chart of the St Lawrence. (16 LVI No.1, and 21-1 p. 69)
		1709	Gedeon de Catalogne surveys the seigneuries along the St Lawrence and Jean-Baptiste Decouragne prepares cadastral maps that lay out property lines and ownership designations. These maps have always been popular in Quebec, especially in recent years for the tracing of family roots. (2 p.297,11 p.42, and 21-1 p.79)
		1714	Board of Longitude is set up to encourage the development of methods for finding longitudes at sea. (16 and 20 p. 12)

- 1714 Captain Taverner's map of Newfoundland published in the First Edition of "Tracts and Plantations of North America". (25)
- 1731 John Hadley describes his reflecting quadrant to the Royal Society. This was the predecessor of the sextant. (7 p. 132 and 20 p. 10)
- 1731 The first depiction of the land between Lake Superior and the prairies is drawn by the Indian Ochagach for Pierre La Verendrye. (19 p.215 and 3 under La Verendrye)
- 1731 The earliest grant of land in the Nova Scotia Crown Lands Record Centre was made in this year to Major-General Cosby for one acre of land on Canso Island. (25)
- 1733-34 George Mitchell surveys from Annapolis around the Bay of Fundy and Baie Verte then westward to Passamaquoddy. (13 and 21-1 p.119)
- 1738 Pierre de La Verendrye is the first European to reach the junction of the Red and Assiniboine Rivers. (3 under La Verendrye)
- 1741 Vitus Bering heading a Russian expedition approached the coast of British Columbia but a landfall has not been confirmed. (3 under Bering)
- 1749 Chossegros de Lery, military engineer and surveyor, lays out lots along a 2.5 mile frontage of the Detroit River, across from the settlement at Detroit, thereby conducting the first land survey in what is now Ontario. In his report the first mention is made of measuring rods for land survey in Canada. (28 p.48 and 31)
- 1749 Captain Charles Morris is appointed the first Surveyor General of Nova Scotia by Governor Cornwallis. This position was held by four successive generations of the family until 1851. In that year it was merged with the position of Commissioner of Crown Lands. (25)
- 1749 At Grindstone Island, Morris took the first accurate determination of latitude and longitude in what is now New Brunswick. (13)
- 1750-51 Joseph Bernard Marquis de Chabert establishes an astronomical observatory at Louisbourg. He carries out a series of latitude and longitude observations as a base for the charting of the St Lawrence. (3 under Astronomy and 11 p.80)
- 1753 Chabert publishes his *Voyage fait par ordre du Roi en 1750 et 1751* which contains detailed charts of the Gulf of St Lawrence. (11 p.80)
- 1755 Mitchell produces the first and second editions of his famous "A Map of the British Colonies in North America". The second edition was used by the military during the Seven Years War and later to help define the southern boundary of Quebec. Inaccuracies in this edition caused problems in defining the boundary between the U.S. and the British Colonies. It was on a print of this map that the contentious American "Red Line" was drawn to illustrate the U.S. position regarding the boundary line. In the mid-1800s further difficulties were caused by inaccuracies in this map when disputes arose during the attempt to define the western boundary of Ontario. (28 p.52)
- 1755 By this year the sextant began replacing the octant and quadrant for navigation and surveying. (7 and 21-1)
- 1758 Samuel Holland and James Cook work together to chart portions of the St Lawrence River and Gulf. (21-1 p.92)
- 1759 Joseph-Jerome de Lalande, French astronomer, becomes interested in lunar distance method for longitude. He visits Maskeline in London to compare notes despite the fact that the armies of the two countries are at war in Canada. (22 and Petit Larousse under Lalande)
- 1759 John Harrison (1693-1776) completes work on his fourth marine chronometer. This instrument is proven suitable for calculating longitudes at sea. (7 p. 140)
- 1760-63 Samuel Holland and others map the St Lawrence Valley ("The Murray Map"). (6 4-2)
- 1761 Nevil Maskeline, 5th Astronomer Royal, tests the lunar distance method for longitude on a voyage to St Helena where he observes the Transit of Venus. He reports, in his *British Mariner's Guide*, that "lunars" are suitable for determining longitude at sea. (20 p. 8)
- 1762-67 James Cook produced a series of charts of the south coast of Newfoundland and part of the west coast. These charts and the accompanying "Directions" resulted from surveys conducted each summer from *HMS Northumberland* and the survey vessel *Grenville*. Among other equipment he used a theodolite for coastal triangulation and the planetable for filling in onshore detail. (21-1 p.170 and 25)
- 1763 A royal proclamation allows the purchase of native lands by the crown but forbids purchases by private persons in Quebec (New France). (28 p.55)

- 1763 A royal proclamation defines the western boundary of Quebec as a line from Lake Nipissing along the Mattawa River to the Ottawa River, thence down the Ottawa and the St Lawrence to the intersection of the 45th parallel and the St Lawrence. This boundary line continued until 1774.
- 1763 Cape Breton Island annexed to Nova Scotia. (3 under Cape Breton Island)
- 1764 Samuel Holland is appointed Surveyor General of Quebec. In the same year he is appointed Surveyor General of the Northern District of North America. (21-1, 23 22-1 p.21, and 28 p.53)
- 1764 John Collins begins the survey of the boundary between Quebec and New York State. (28 p.560)
- 1764 James Cook is appointed King's Surveyor for Newfoundland. Reported in the *Hydrographic Annual* No.2, 1913.
- 1764-85 Michael Lane, Cook's assistant and successor, extended Cook's work in Newfoundland and the southern Labrador Coast. (25 and 21-1 p.110)
- 1765 DesBarres builds an observatory at Castle Frederic in Nova Scotia. (18, Dec. 1977)
- 1765-66 Samuel Holland and assistants survey St Johns Island (P.E.I.) and the Magdalen Islands. St Johns was divided into 67 "lots" of about 20,000 acres each. These lots were gradually subdivided and settled. (3 under P.E.I.)
- 1766 The first *British Nautical Almanac* is published (for the year 1767). It contained sun and star tables and tables for lunar distance calculations. (16and20p.12)
- 1769 The first scientific observations for latitude and longitude in western Canada are made at Fort Prince of Wales (now Churchill) in preparation for observing the transit of Venus. The surveyors were Messrs Joseph Dymond and William Wales. (624-1)
- 1769 *lie St-Jean* is separated from Nova Scotia to become a separate province. In 1799 its name is changed to Prince Edward Island. (3 under P.E.I.)
- 1771 Samuel Hearne reaches the Arctic Ocean at the mouth of the Coppermine River. (6 18-4)
- 1772 Samuel Hearne compiles his "Map of Part of the Inland Country to the Northwest of Prince of Wales Fort". (618-4)
- 1774 Captain Juan Perez reaches the Canadian west coast. He is the first European to have made a confirmed sighting of this part of Canada. (3 under Perez)
- 1774 The Quebec Act enlarges the boundaries of the Province of Quebec from Labrador to Lake Superior and southward into what is now Michigan, Ohio, Illinois, Minnesota and Wisconsin. (28 p.56)
- 1777 First edition of DesBarres' *Atlantic Neptune* published. (3 under Cartography)
- 1778 Philip Turner begins to map parts of north central Canada for the Hudson's Bay Co. He used sextant measurements for both latitude and longitude. (21-1 p. 195)
- 1778 Captain Cook arrives at Nootka on west coast. His chart of the "North West Coast of America" NMC (10833) delineates the true shape of the coast and ends "imaginary cartography" of the region. (11 p.95)
- 1781 A four-mile strip of land along the Niagara River is purchased from the Mississauga and Chippewa. This is the first purchase of native land for white settlement in what is now Ontario. (28 p.59)
- 1783 Governor Haldimand issues instructions to Samuel Holland to make exploratory surveys for settlement of the Loyalists. This sets in motion the whole process of survey and settlement that formed Southern Ontario. (6 17-3 and 28 p.64)
- 1783 Land surveying in what is now Ontario is commenced with John Collins' survey of Kingston Township. It was first surveyed with an outline six miles square, but on instructions from London received in October 1783, it was altered to a six-by-ten outline with lots of 200 acres. (6 17-3, 22-1 and 28 p.64)
- 1783 The Single Front system of township survey was commenced. This was the first use in Canada of a regular township survey pattern. This pattern was continued, with modifications in 1789, until 1818. (6 17-3 and 28 p.65)
- 1784 Province of New Brunswick is separated from Nova Scotia. Cape Breton is also separated from Nova Scotia as a separate colony but is reunited in 1820. (3 under New Brunswick)
- 1784 George Sproule is appointed first Surveyor General of New Brunswick. He took office in the spring of 1785 and remained in the position for 33 years. He created the Surveyor General's Office and maintained essential land records. (25)

1784-85	Peter Pond produces a map based on his own explorations which discloses the canoe route from the prairies into the Athabasca and Mackenzie Rivers. This map is the first to depict part of the Mackenzie Basin. (3 under Pond)	1791	Marlborough and Oxford Townships surveyed on the Rideau River by Theodore de Pencier and Jesse Pennoyer respectively. These were single-front alternate surveys designed to reduce survey costs by only surveying 1st, 3rd 5th, etc. concession lines. (23 39-1)
1785	Legislation is enacted by Quebec to provide for test meridians at Quebec, <i>Trois-Rivieres</i> and Montreal for the purpose of calibrating surveyors' compasses. (2 and 28 p.75)	1792	Upper Canada is divided into counties. (28 p.91)
1785	"An Ordinance Concerning Land Surveyors and the Admeasurement of Lands", passed by Quebec, establishes the basis of subsequent land surveying legislation in Ontario. This act requires prospective surveyors to be examined by the Surveyor General. This constitutes the first formal requirement for the examination of surveyors in Canada. (28 p.75)	1792	David W. Smith appointed first Acting Surveyor General of Upper Canada. He was confirmed in 1801. (28p.92)
		1792	George Vancouver begins his hydrographic survey of the West Coast. (3 under Vancouver)
		1793	Mackenzie reaches the Pacific Ocean travelling overland. (3 under Mackenzie)
1786	The Territorial Divisions Act passed in New Brunswick. It established 8 counties and 35 parishes. (26 Geo III - Cap 1)	1793	The first land patent is issued by the Province of Upper Canada. (25 Ontario)
		1794	The survey of Yonge Street is commenced. When completed this provided a military road to Lake Simcoe and from there a water and portage route to Lake Huron. (21-1 p.231 and 28 p. 100)
1786	The Registry Act passed in New Brunswick. This was an act for the registering of deeds, conveyances, wills, etc. (25)		
1787	Front and Rear system of township surveys commenced in the Niagara Peninsula. It was continued in that area until 1813. (6 17-3)	1794	The first U.S.-Canada boundary commission created by the Jay's Treaty. (21-4 ch 2)
1788	Captain Gother Mann carries out the first British hydrographic surveys of importance on the Great Lakes, charting stretches of the Georgian Bay shoreline. (21-1 p. 185 and 28 p.77)	1794	Probably the first map of New Brunswick was published in <i>Kitchen's Atlas</i> . A copy is held in the N.B. Lands Office. (25)
		1795	Gale and Duberger publish the first map of Quebec Eastern Townships. (4 44-1)
1789	Alexander Mackenzie reaches the Arctic Ocean at the mouth of the river which now bears his name. (3 under Mackenzie)	1795	The first Registry Act is passed in Upper Canada for purposes of facilitating transactions of real property. Registration is optional, however, and no priority is gained by registering a deed unless a previous memorial has been recorded. It is not until 1851 that registration is made a requirement following the granting of a Crown patent. (25 Ontario)
1789	<i>Rules and Regulations for the Conduct of the Land Department</i> are published. Plans were given for waterfront and inland townships and an attempt was made to enforce the establishment of a townsite in each township. No townsite was ever set out according to plan but these regulations started a series of improvements to the basic 1783 township design. (6 17-3)	1797	Thomas Wright (representing Great Britain) and Samuel Webber (representing the U.S.) set up an observatory near St Andrews to determine the latitude and longitude of the point to help decide which of two rivers was the St Croix River mentioned in the Treaty of 1783. (3 under Thomas Wright)
1791	Upper and Lower Canada established by Order-in-Council. The border between Upper and Lower Canada now follows the western boundary of the seigneuries at the angle of the St Lawrence and Ottawa Rivers, thence up the Ottawa to Lake Timiskaming and then due north to James Bay. (21-1 and 28 p.88)	1797	The Royal Canadian Institute, an association of land surveyors, engineers and architects, is formed. (29 p. 132)

- 1798 Upper Canada's first survey act, "An Act to Ascertain and Establish The Boundary Lines of the Different Townships of this Province" is enacted. The Act requires the planting of monuments of stone or other durable material at township corners and governing points, and provides the death penalty for wilful defacement, alteration or removal of the monuments. (28 p. 103)
- 1790s Marine chronometers have begun to be generally available but are expensive. Compared with the number of ships at sea there are relatively few equipped with this valuable instrument. (7 p. 140)
- 1811 The Hudson's Bay Company cedes land along the Red and Assiniboine Rivers to Thomas Douglas, 5th Earl of Selkirk, (3 under Hudson's Bay)
- 1812 Deputy Surveyor Robert McLean constructs what is believed to be the first theodolite built in Ontario. It had a horizontal circle 25 inches in diameter and could be read to half minutes by a vernier. It probably had open sights similar to a circumferentor. (Letter McLean to Thomas Ridout, Surveyor General of Upper Canada. Reprinted in 4 31-2 p. 193)
- 1813 David Thompson completes the manuscript of his famous "Map of America between Latitude 40 and 70 North and Longitude 80 and 150 West".(11p.208)
- 1814 Peter Fidler is employed by Lord Selkirk to lay out 36 river lots along the Red River. These are the first property surveys on the prairies. (24 p. 192 and 25 Manitoba)
- 1815 Joseph Bouchette publishes his text *The British Dominions in North America*. This included a general map of British North America and a map of Lower Canada at 2 1/2 miles to an inch. (21-1 267 and 22)
- 1815 Henry Bayfield, aged 20, starts his hydrographic career with Captain W.F.W. Owen on the Great Lakes. He continued his surveys in Canadian waters until 1856. (21-1 p. 186 and 5 p.39)
- 1818 Double Front system of township survey commenced in Upper Canada. It was continued to 1829. (6 17-3)
- 1819 Edward Parry explores Lancaster Sound north of Baffin Island and sails west through Viscount Melville Sound to Melville Island. This long traverse, together with the mapping of Canada's mainland arctic coast (1819-1846), provided "baselines" for the subsequent mapping of the Arctic Islands. (35 pp.75 and 76)
- 1819-22 John Franklin leads an expedition that explores and maps the Coppermine River and the coastline from the Coppermine to Bathurst Inlet. This is the first step in the mapping of Canada's Arctic seaboard.
- 1820 The first recorded gravity measurement in Canada is made by Lt Edward Sabine, a member of Edward Parry's Northwest Passage expedition. (21-4 ch 2)
- 1824 A survey of the proposed Rideau Canal is carried out by the Royal Engineers. (27)
- 1824 David Thompson conducts surveys to locate the "most northwest point of the Lake of the Woods." Under Article Seven of the Treaty of Ghent, the international boundary ran through the Great Lakes to this point, thence due south to the 49th parallel. Thompson decided that this ill-defined point should be either at the present position of Kenora or at the northern point of an inlet now known as Northwest Angle Inlet. (21-1 p.260)
- 1825 Dr Tiarks, a British astronomer, decides that the point chosen by Thompson at Northwest Angle Inlet is the point referred to in the Treaty of Ghent. This decision is accepted by the Americans. (21-1 p.260)
- 1825-27 Franklin and Dr John Richardson map the mainland coast from the mouth of the Mackenzie River west to Prudhoe Bay (Franklin) and east to the Coppermine River (Richardson). (35 pp.75 and 76)
- 1827 Bayfield starts the hydrographic survey of the River and Gulf of St Lawrence. (5 p.39)
- 1829 2400 Acre Section system of township surveys commenced in Upper Canada. It was continued to 1851. (6 17-3)
- 1832 Bouchette publishes his second and improved map of Lower Canada.(21-1 p.266 and 22)
- 1833-35 Part of the route for the Trent Valley Canal is surveyed. The survey is completed in 1887 for the canal which runs from Trenton to Georgian Bay. (27)
- 1834 W. Mac Kay compiles a map of Nova Scotia more accurate and complete than any before. (15, report of 1857)
- 1835 1000 Acre Section system of township surveys commenced in Upper Canada. It was continued to 1906. (6 17-3)
- 1837 Samuel Morse invents the electric telegraph. By 1850 it was being used for the transmission of time signals. It was used by Bayfield to determine the longitude of Canadian cities, (See 1856)

- 1837-39 Peter Dease and Thomas Simpson explore and map the arctic mainland coast from the Coppermine River to Chantry Inlet. (3 under Dease)
- 1838 Boards of Boundary Line Commissioners are set up in Upper Canada to settle disputes resulting from deficiencies in the survey fabric (1 Victoria 1837,1838). The Boards were found to be ineffective and the Act was repealed in 1841 and expired in 1842. (23 23-2 p. 18)
- 1838 Beginning of the geological survey of Newfoundland under J.B. Jukes. Jukes's field work, 1839-40, was confined to what he could observe from the coast. "The interior was filled up partly from a rough personal survey and partly from oral information...." (See J.B. Jukes *Excursions In and About Newfoundland*, by John Murray: London, 1842, and geological map in National Archives) (H2/100/1840)
- 1841 Upper and Lower Canada united in the Province of Canada as Canada West and Canada East. (3 under Province of Canada)
- 1842 The Geological Survey is established in Montreal. Topographic surveys to provide geological base maps are begun. (21-1 p.290 et seq)
- 1842 Adolphus Lee Lewes is the first person to be formally employed as a surveyor in British Columbia. He was hired by the Hudson's Bay Company to map the Company's new establishment at Fort Victoria. He produced a map titled "Ground Plan of portion of Vancouver Island selected for New Establishment taken by James Douglas, Esq.". This map, dated 1842 is the earliest known example of map making by a land surveyor on Vancouver Island. (21-1 277 and 33 p.2)
- 1843-44 Canada's first precise traverse is run by Captain W.F.W.Owen on the frozen Saint John River. (442-1)
- 1843-45 The survey of the boundary between Quebec and the U.S.A. completed. (4,4-6 p.6)
- 1845 Franklin sets out on his ill-fated voyage to the Canadian Arctic. (3 under Franklin)
- 1845 Office of Surveyor General is abolished in Canada West. It will be reestablished in 1928. (28 p. 129)
- 1846 The Oregon Treaty is signed giving the British undisputed sovereignty to land north of the 49th parallel as well as the whole of Vancouver Island. (3 under BC and 21-1 p.261)
- 1846-47 Dr John Rae surveys Canada's coastline from Fox Basin to Boothia Peninsula thus virtually completing the mapping of Canada's arctic mainland seaboard. (35 pp.75 and 76)
- 1846-48 Royal Engineers survey routes for the Intercolonial Railway. The final surveyed right-of-way is 1158 miles long. It borders the Gulf and River St Lawrence for the most part of its run from Halifax to Quebec City. (27)
- 1848 The search for Franklin begins. This effort, which continued until 1859, disclosed much about the geography of the Canadian Arctic Islands. (3 under Franklin Search)
- 1849 The first legislation to govern the profession of land surveying in the Province of Canada is enacted. It changes the status of land surveyors from direct servants of the Crown, in the capacity of deputies of the surveyor general, to independent professionals responsible for their own actions. Hereafter surveyors in the Province of Canada are identified as "Provincial Land Surveyors" and are entitled to add "PLS" after their names. In due course the other provinces pass similar acts. (28 p. 138)
- 1850 In 1850 John M'Clure enters the Arctic Ocean from the Pacific and coasts eastward to Cape Parry. He then turns north and sails through Prince of Wales Strait to the north-east angle of Banks Island thus reaching Viscount Melville Sound from the west. This virtually completes the exploration of one of the North west Passages. (3 under McClure and 35 pp.75 and 76)
- 1851 Joseph Despard Pemberton appointed Surveyor for the Colony of Vancouver Island. (21-1 p.279)
- 1853-55 The Quebec-New Brunswick boundary surveyed. (4IV-6 p. 15)
- 1853-56 In the single report of the Geological Survey for these years, Dr Logan discusses his problems in compiling an accurate base map for the Province of Canada. (15)
- 1856 "Electric Observations" (i.e. telegraphic time signals) are used to find the accurate longitude of Collingwood, Kingston, Montreal, Ottawa, Quebec City, Toronto and Windsor. (15 Annual Report 1857)
- 1856 The survey of the first baseline in Northern Ontario is commenced. Known as the Salter Line, it is extended from Lake Nipissing to Sault Ste Marie, laying a foundation for the later surveying of Northern Ontario. (28 p. 159-62)
- 1856 Rear-Admiral Henry Bayfield retires from hydrographic surveys in Canadian Waters. (21-1 p. 189)

- 1856-77 Maps of 34 Ontario counties published between 1856 and 1877. Most of these were produced by George C. Tremaine and Henry F. Walling. (22, in booklet *County Maps*, 1976).
- 1857 Captain Richards RN, of *HMS Plumper*, made observations in Semiahmoo Bay for the determination of the 49th parallel for the implementation of the Treaty of Oregon of 1846. This provided a starting point for the westward survey of the parallel. (11 p.119 and 21-1 261)
- 1858 Colonel John Summerfield Hawkins, R.E. arrives to commence the westward survey of the 49th parallel from Semiahmoo Bay. (21-1 p.261)
- 1858 The boundary between Nova Scotia and New Brunswick is surveyed by Alexander Munro. (4XII-1p.8)
- 1858 A company of Royal Engineers arrives in British Columbia, at the request of Governor Douglas, to conduct surveys, mark out allotments, survey road locations etc. (21-1 280)
- 1858 Simon James Dawson C.E. explores and maps the 90 mile trail from the Lake of the Woods to the Red River. (3 under Dawson)
- 1858 First Canadian fire insurance plan is published. This is the *Boulton Atlas of Toronto*. (39 p.x)
- 1859 Thomas Devine, head of the Surveys Branch of Upper Canada, publishes the first official map of Canada entitled "Government Map of Canada from the Red River to the Gulf of St Lawrence". He apparently used Dr Logan's base map (see 1853-56) to position western detail. (11 p. 160)
- 1859 Six mile square survey township system commenced in Northern Ontario. Each township was divided into 36 sections almost identical to the American township system. (6 17-3 and 28 p. 123)
- 1859 Thomas Devine, Surveyor General of Upper Canada, introduces the split-line method of recording field notes. (28 p. 154)
- 1861 Thomas Devine publishes his map "Huron and Ottawa Territory, Upper Canada". It is noted for the detailed delineation of township surveys. (21-1 p.248)
- 1861 The Torrens system of land titles registration is introduced by the Land Registry Act of British Columbia. This is the first use of the Torrens system in North America. (25)
- 1862-76 Maps of six New Brunswick counties published: Albert and Westmoreland, 1862, by H.F. Walling; Carleton, 1876, by Roe and Colby; Northumberland, 1876, by Roe and Colby; St. John and Kings, 1862, by WE. and A.A. Baker (not to be confused with WC. and H.H. Baker, see 1863). (44)
- 1862 A survey of the Ontario-Quebec boundary from Lake St Francis to the Ottawa River, which had been run several times before with mixed results, is finally accepted as correct. (28 p. 176)
- 1863 Map of the three counties of Prince Edward Island drawn on a single map by D.J. Lake. The map was published by W.C. and H.H. Baker (of StJohnN.B.).(44p.73)
- 1863-88 Maps of 10 Quebec counties published between 1863 and 1888. They were drawn by J.H.Leclair, H.F.Walling and O.W.Gray. (44 P-81)
- 1864 Benjamin Pearse is appointed Surveyor General of Vancouver Island and Joseph Trutch is appointed Surveyor General of the Colony of British Columbia (i.e. the mainland).(25)
- 1864-88 Ambrose F. Church, civil engineer and map maker from Maine, carries out surveys and produces a set of 18 county maps of the 18 Nova Scotia counties. (44 p.21)
- 1866 The Colonies of British Columbia and Vancouver Island are united. Joseph Trutch is appointed the Surveyor General of the joined colonies. (3 under B.C. and 25)
- 1867 By this year the engineer's transit is widely used in Canada. Chains made of links of steel wire, each 7.92 inches long, are used for distance measuring. (27)
- 1867 Simon Dawson surveys the "Dawson Route" from Port Arthur to the Red River. This road was based on his 1858 explorations and was used until the opening of the CPR.(3 under Simon Dawson)
- 1867 The British North America Act brings the Provinces of Canada, New Brunswick and Nova Scotia into one Dominion of Canada, divided into four provinces of: Ontario, Quebec, New Brunswick and Nova Scotia. (3 under BNA Act)
- 1869 Lt Col Dennis, PLS, accompanied by Major Wallace, Captain Boulton, Milner Hart PLS, William Durie, William Dow and J.D. Wilkins

- arrive in the Red River Settlement and commence surveying for land settlement. Major A.C. Webb joins them later. Webb's survey was stopped on October 11 by a party of 17 Metis under Louis Riel. Further survey was discontinued because of this action and the approach of winter.(4 XVII-5 p.380, 12 ch 2, and 30)
- 1869-70 On November 19 the Hudson's Bay Company agreed to surrender Rupert's Land to the Dominion of Canada. Royal assent was given on 23 June 1870. (3 under HBC)
- 1870 Manitoba created by the Manitoba Act of 1870. (3 under Manitoba)
- 1871 The system of township survey designed by J.S. Dennis on instructions from Governor Adam Archibald was authorized by Order-in-Council. *Manual Showing the System of Survey Adopted for the Public Lands of Canada* published in Ottawa in 1871. (4 XVII-5 p.380)
- 1871 The Dominion Land Survey of the Prairies is started. Plans of survey of townships are published at 2 inches to 1 mile. Thirteen survey parties were in the field on the first season (21-2p.35)
- 1871 Benjamin William Pearse is appointed Surveyor General of the new Province of British Columbia.(25)
- 1871 British Columbia joins Confederation. (3 under BC)
- 1871 Sanford Fleming explores the Lake of the Woods-Red River Country for the proposed CPR railway line. (12 p.53)
- 1871-77 The survey of the CPR from Mattawa to Vancouver, a distance of about 2881 miles is carried out. Routes explored amounted to nearly 26,000 miles of which 11,500 were chained and levelled. (12 p.51 and 21-2 pp.82 and 231).
- 1872 Surveyors of Dominion Lands appointed under the Dominion Lands Act of 1872 were styled Dominion Land Surveyors and were allowed to use the designation DLS after their names. (21-2 p.39)
- 1872-4 The International Boundary from the Northwest corner of the Lake of the Woods to the Rocky Mountains is surveyed. (21-2 p. 165)
- 1872 The survey of the Ontario-Quebec boundary line from the junction of the Ottawa and Mattawa rivers to Lake Temiskaming and thence to James Bay is commenced. (28 p. 177)
- 1873 Prince Edward Island enters confederation on July 1st. (3 under P.E.I.)
- 1873 The Surveys Branch is established in the Department of the Interior. This is the forerunner of the present Geomatics Sector in NRCan. (21-2 p.57)
- 1873 Management of Dominion Lands is transferred to the newly constituted Dept. of the Interior. (21-2 p.57)
- 1874 The "Special Survey" designed to check on the accuracies of the surveys of Dominion Lands was instituted by Order-in-Council passed in February 1874. Triangulation between the Principal and Second Meridians is started. (21 - 2 p.40)
- 1874 An Act respecting Land Surveyors and the Survey of Land in New Brunswick is enacted, specifying that there will be a Board of Examiners for the examination of candidates to become Deputy Land Surveyors. (Act 6 37 Vic CXXINB)
- 1874 A meeting of land surveyors resident in Manitoba and the Northwest Territories was held in Winnipeg on April 27th to explore the possibility of forming an association. (12 p.28)
- 1874 D.A. Sanborn Co. of New York sends surveyors to Canada to prepare fire insurance plans for a number of Canadian cities. The following year Charles E. Goad, of Montreal, begins to produce plans similar to Sanborn's and thereafter dominated the business for 50 years.(39 p.X)
- 1875 The first of the 32 county atlases of Ontario is published. Five publishers shared the titles of this enterprise: H. Belden & Co.(17), H.R. Page & Co.(8), Walker & Miles (5), J.H. Meacham, and H. Parsell one each. The last atlas is produced in 1881, though other editions appear in 1903 and 1906. (10 p. 163 and 19 p. 12)
- 1875 The *Atlas of St John County, New Brunswick*, is published by Roe & Colby. This is followed by the *Atlas of York County, N.B.*, in 1878, published by Halfpenny & Co. (19 p.12)
- 1875 Edouard Gaston Daniel Deville is appointed Inspector of Surveys for Quebec. (3 under Deville)
- 1876 The "Special Survey" triangulation between the First and Second meridians is completed. The Special Survey check is carried on by a resurvey of certain baselines and meridians and with telegraphic checks for longitude, (21-2 p.40)
- 1877 The first survey of an Indian reserve in western Canada (Berens River) carried out. (25 Manitoba)

1878	The Special Survey to check the surveys of Dominion Lands on the prairies is discontinued. (21-2 p.40)		W.E.McCara. See 4 XXHM p.5 for a description of the Torrens System.
		1884	A rectangular township system is adopted for land delineation and land titles in Newfoundland. This system was abandoned in 1886 as being impractical in the rough Newfoundland country. (431-2)
1879	The band chain replaces the original steel wire link chain for surveys on the prairies. (25 Manitoba)		
		1884	GSC starts 1-Inch planimetric mapping of Nova Scotia. By 1910, 91 sheets had been published covering the whole province except the south-west tip. (21-4 ch 4)
1879	The Atlas of Pictou County, Nova Scotia, is published by J.H. Meacham & Co. (19 p. 12)		
		1884	A 6-Mile map showing the DLS surveys on the prairies is published by Dept. of Interior. Subsequent editions appeared until 1891. (19 p. 19)
1880	The Association of Land Surveyors of Manitoba and the Northwest Territories is formed in Winnipeg on December 16th. (12 p.28)		
		1885	The Torrens system of land registration is introduced in Ontario with the passage of the Land Titles Act. Originally it applied only to Toronto and the County of York. In 1886 it was extended to all Crown grants in Northern Ontario and the districts of Parry Sound, Muskoka and Haliburton. With some exceptions, registration under the Land Titles act is voluntary, provided that the necessary land division has been established by regulation under the Act. (28 p.207 and 4 23-1 p.5),
1880	The British rights to the Arctic Islands are passed to Canada. Canada assumes its present extent. (3 under Territorial Evolution)		
1880	The <i>Atlas of King's, Queen's and Prince Counties</i> of P.E.I, is published as a single volume by J.H. Meacham & Co. (19 p. 12)		
1881	On January 30 the act of incorporation of the Association of Manitoba Land Surveyors was passed by the Provincial Legislature under the title "The Provincial Land Surveyors' Act". (12 p.28)	1885	The Canadian Pacific Railway is completed across the country. (21-2 p.82)
1881	Manitoba enlarged from the "Postage Stamp Province" up to the 12th baseline. (3 under Manitoba)	1885	E.G.D. Deville is appointed Surveyor General of Canada. (3 under Deville)
		1886	The Association of Provincial Land Surveyors is formed in Ontario on February 23. The Association is at first not incorporated. (12 p.37and28p.!87)
1881	The <i>Atlas of Eastern Townships and South western Quebec</i> is published in the form of a county atlas by H. Belden & Co.		
1882	The Dominion Land Surveyors' Association is formed on April 24. (12 p.31)	1886	An Act Respecting Land Surveyors and the Survey of Lands is passed. (Report of the 50th Annual Meeting of the Corporation of Land Surveyors of B.C., 1955)
1882	The <i>Corporation des arpenteurs géomètres</i> is formed on May 27. (12 p.35)		
1883	The Georgian Bay Survey, predecessor of the Canadian Hydrographic Service, is established in the Department of Marine and Fisheries under Staff Commander John G. Boulton RN. (21-2p.207)	1886	The Department of Marine and Fisheries publishes the first Canadian hydrographic chart. (19p.147)
		1886	Photo-topographic surveys start in the Rocky Mountains following successful experimental work in 1885. (19p.!5)
1883	The Surveys Branch of the Dept. of the Interior is renamed the Technical Branch. (19 p.36)	1886	Staff Commander Boulton establishes a benchmark at Little Current, Manitoulin Island, thus commencing observations for Great Lakes water levels. (8, 19th annual report, Appx 26)
1883-1907	Missionary Rev. Adrian Morice maps a 200 mile square area, centered on Fort St James, between 1883 and 1904. He publishes the map, titled "Map of the Northern Interior of British Columbia", in 1907. (21-2 p.127)	1886	Map of Cariboo District is drafted by Amos Bowman, assisted by James McEvoy. This is said to be the first accurate large-scale map of a part of British Columbia. (21-2 p. 128)
1884	The Torrens system of land registration introduced into Manitoba by Registrar General,		

- 1886 "Map Showing Mounted Police Stations and Patrols", a map of the Prairies published by the Dept. of the Interior annually between 1886 and 1893. This map drawn at 16 miles to one inch shows the settlement of the prairies including the railways and telegraph lines. (22 NMC11793)
- 1886-1930 A cadastral mapping program is implemented to determine the land ownership situation in the larger settlements of Newfoundland. (4 6-3)
- 1887-88 George M. Dawson, William Ogilvie and R.G. McConnell start the mapping of the south-west Yukon at 6 miles to the inch. Numerous points were fixed in latitude and chronometer longitudes. The micrometre telescopic range finder is used for distance measuring on the traverses (4 45-2 and 14, December 1897, under White)
- 1887-88 William Ogilvie determines the position of the 141st meridian at the Yukon River by using the moon culmination method. (4 45-2, 4 50-2 and 21-2p.151)
- 1889 A three-man arbitration board sets the Ontario-Manitoba boundary on the meridian extending north from the north-west angle of the Lake of the Woods to the English River. Ontario's northern boundary is moved northward from the height of land to the English and Albany Rivers (where it will stay until 1912). (28 p.176)
- 1890 The Association of Provincial Land Surveyors is formed in British Columbia on December 1st. (12p.39)
- 1890 The Technical Branch of Interior is renamed The Topographical Survey Branch, thus indicating that the Department is entering into topographic mapping in a serious way (i.e. not just with photo-topographic projects but with 3-Mile mapping and other scales). (19 p.36)
- 1890 The position of Geographer at Interior is established by C 1764 of 5 July 1880. (6 19-1)
- 1891 The Land Surveyors' Act is passed in British Columbia. Although the profession is not strictly regulated in the Province, members of the Association of Provincial Land Surveyors are entitled by appointment to append the initials PLS (provincial land surveyor) to their names. Only surveyors who have been approved by the B.C. Board of Examiners are allowed to do this. (12 p.39)
- 1891 The first sheet of the 3-Mile Series published (Sheet 315 Edmonton). In all, 134 sheets were published. The last first edition appeared in 1922, the last revision in 1955. (19 ch.3)
- 1892 Propagation of survey control by triangulation and resection is initiated by Thomas Kains, Surveyor General of B.C. The rectangular township, as used on the prairies, was not suited to the B.C. terrain, and Kains advocated trigonometric methods. Southern B.C. is probably the only region in Canada where resections were allowed for legal surveys. (34 p.Y46)
- 1892 An act to incorporate the Association of Ontario Land Surveyors, and to amend the act respecting land surveyors and the survey of lands, is passed, bringing the self-governing Association of Ontario Land Surveyors into existence. (28 p.200)
- 1892 Photo-topography was started in B.C. by Thomas Kains following the successful use of the method in the Rocky Mountains by federal surveyors starting in 1886. (34 p.Y46)
- 1893 The Department of Marine and Fisheries establishes the Tidal Survey Section under Dr W.Bell Dawson. (5 p.87)
- 1895 Willis Chipman publishes an influential paper in the Ontario Land Surveyors annual report of 1895 titled "A Plea for a Topographical Survey". (Proceedings of Annual Report)
- 1896 The subdivision of Southern Ontario into townships is completed. (28 p.211)
- 1897 The Geographic Board of Canada is formed primarily to regulate the application of geographical names. (19 p.209)
- 1897 James White publishes a paper summarizing the topographic mapping done by the Geological Survey to 1897. (14, Dec. 1897)
- 1897 The position of the Manitoba-Ontario boundary is surveyed from the Lake of the Woods to the Winnipeg River. For the continuation of this survey see: 1922, 1930, 1937, and 1948. (21-2 p.269and28p.178)
- 1899-1908 B.C.-N.W.T. boundary is surveyed between Teslin Lake and Tatshenshini River. (21-4 ch 2)
- 1900 The Ontario government initiates a systematic exploration of Northern Ontario. Ten exploration parties, led by land surveyors (with one exception) and accompanied by a geologist and timber assessor, are instructed to report on timber resources and geology, including the economic potentials of found minerals. They were also required to report on flora, fauna, and rivers and lakes suitable for communication routes and power generating sites. The results of the survey accelerated the survey of new townships in what was beginning to be called New Ontario. (28 p.216)

1901	Hydrographic Survey of Lake Winnipeg is started. (4 36-2 p. 162)	1904	The first sheet of the Chief Geographer's 1:250,000 Series is published, Sheet 1SW, Windsor. (19 p. 124)
1901	In 1901 it is decided in the Department of the Interior to start two compiled map series at 1:250,000 and 1:500,000 covering the eastern part of Canada (i.e. the part not being covered by the 3-Mile Series). Both scales became known as the Chief Geographer's Series. (19 p.121)	1905	The first sheet of the Chief Geographer's 1:500,000 Series is published, Sheet 13, New Brunswick. (19 p. 125)
1901	Marconi succeeds in passing radio signals from Cornwall, England to St. John's Newfoundland. Within 10 years radio time signals would be available for navigation and geodesy. (3 under Signal Hill)	1905	Alberta and Saskatchewan enter Confederation. (3 under Alberta and Saskatchewan)
1902	The Dominion Astronomer, Dr W.F. King, is appointed to be International Boundary Commissioner. (PC minute dated Oct. 14,1902)	1905	A new Land Surveyors' Act is passed establishing the Corporation of Land Surveyors of the Province of British Columbia. (12 p.40)
1902	First precise gravity measurements made in Canada by Dr O.J. Klotz at Ottawa, Montreal and Toronto using a modified Mendenhall Pendulum Apparatus. (21-4 ch 2)	1905	The sheetline numbering system of the 3-Mile Series is changed on 1 March, 1905. Example: Sheet 79, Edmonton, becomes Sheet 315. Many sheets of this series are converted from planimetric to topographic starting in 1921. (40 p.5)
1903	The Department of Militia and Defence establishes Canada's military mapping unit, called initially the Mapping Branch of the Intelligence Department. Survey operations were started in 1904. (19p.36)	1905	The first geodetic triangulation is started in the vicinity of Ottawa by the Dominion Observatories Branch of Interior. The first station is established on King Mountain. Observation towers are used for the first time, one of which, at Bowesville south of Ottawa, was 87 feet high. In the next season nine towers were built to an average height of 75 feet. (21-2 p.226, 28 p.235 and annual report of the Chief Astronomer for 1908)
1903	Major E.H. Hills, Head of the Topographical Section of the War Office, is invited to come to Canada and report on the need in Canada for better and more extensive mapping. (19 p.36)	1906	The Survey Branch of the Intelligence Department of Militia and Defence is renamed the Survey Division. (19 p.36)
1903	Ontario survey instructions introduce for the first time the use of wrought iron survey posts. (<i>Crown Surveys of Ontario</i> by W.F. Weaver, Dept of Lands and Forests, 1962 p.24)	1906	The first edition of <i>The Atlas of Canada</i> is published. (19 p. 165)
1903-06	Roald Amundsen, in the small vessel Gjoa, traverses the Northwest Passage via Lancaster Sound, Peel Sound, and along the western Arctic Coast.	1906	Ontario adopts the 1800 Acre Section System for township surveys. The 1000 Acre System is dropped. (28 p.222)
1904	Military 1-Inch mapping is started. Originally it was planned to use township surveys and railway level lines for planetable control but these were found not to be sufficiently accurate. Control surveys for planetable mapping started in 1905. (27)	1906	The planetable is added to the survey equipment of all federal mapping agencies. It had been used in Samuel Holland's day but had fallen out of use for land surveys because of Canada's mainly forested landscape in which compass and chain surveys were much more suitable for settlement surveys. Little topography other than sketching was done in Canada before 1906 other than the photo-topography in the Rocky Mountains. (27)
1904	The Hydrographic Branch is established within the Department of Marine and Fisheries. (Order-in-Council 461 of Mar.11)	1906	Geodetic Precise levelling is started with the establishing of the first geodetic first-order bench mark at Sherbrooke, Quebec. (21-4 ch 2)
1904	A new Land Surveyors Act is passed changing the title of the Association of Provincial Land Surveyors to the Association of Manitoba Land Surveyors. (12 p.31)	1906	Lunar distance tables are dropped from the Nautical Almanac because of the availability of radio time signals. (20 p. 12)

1907	CGS <i>Lilloet</i> enters the Hydrographic Service, the first Canadian vessel built specifically for hydrographic surveying. (21-2 p.215)	1913	The survey of the Alberta-British Columbia boundary commenced and continued north to latitude 57°26'40.25". (21-4 ch 2)
1907	The Pacific Region of the Canadian Hydrographic Survey established in Victoria. (11 p. 127)	1914	Land Titles Act passed in New Brunswick. (Act 4 Geo V C22 Statutes of New Brunswick.)
1908	The Geological Survey groups its topographers into a Topographic Survey Division. (19 p.36)	1915	Dr Klotz and F.A. McDiarmid lay the foundations of a national gravity network and gravity mapping program. (21-4 ch 2)
1908	First two sheets of the NTS 2-Mile/1: 125,000 Series published. These were Brockville 3IB NW and a special, Niagara 30M SW and 30L NW. (22 NTS Indexes)	1915	The Second Edition of the <i>Atlas of Canada</i> is published. (19 p. 165)
1908	Treaty of Washington includes an agreement to reestablish and map the U.S.-Canada Boundary. (See also 1925)	1916	Military training maps at 1:20,000 and 1:31,680 are introduced by Militia and Defence. These were the first 20th Century topographic maps larger than 1-Inch scale published by the Federal Government. (19 p. 109)
1909	The Geodetic Survey is officially established within the Department of the Interior although geodetic work had been going on since 1905. Dr W.F. King is the first director.(21-2 p.224-28)	1916	The Manitoba Surveys Act is drafted by the Association of Manitoba Land Surveyors and is passed by the provincial legislature. (25)
1909	The Saskatchewan Land Surveyors' Act is passed. It defined the Land Surveyor but gave no right to self-government. All authority was vested in an appointed board of examiners. In 1910 the Saskatchewan Land Surveyors' Association was formed but it was not until 1913 that the Land Surveyors' Act was amended to give the Association power to control examinations and its members the right to practice land surveying in Saskatchewan. (12 p.43)	1916	The first transcontinental line of geodetic precise levels, run along railways from Halifax to Vancouver, is completed. (21-4 ch 2)
1909	The position of Geographer in Interior is changed to Chief Geographer. (6 19-1)	1920	The first commercial flight is made into northern Canada. No air charts were available in Canada at this time. (19 p.93)
1910	The Alberta Land Surveyors' Association is formed. In 1910 the provincial government of Alberta passed the Land Titles Act, the Alberta Land Surveyors' Act and the Alberta Surveys Act. The Alberta Land Surveys Act defined an "Alberta Land Surveyors' Association". (12 P-40)	1920	The Chief Geographer, Dept. of the Interior, is requested to produce certain experimental air charts using all available map sources. This became an established role by 1929 but was transferred to the Legal Surveys and Map Division in 1933. (19 Chap.8)
1911	The first Canadian coastal chart engraved in Canada is published. (19 p.217)	1920-50	A Series of Cadastral Plans covering New Brunswick were drawn during this period. Originals are in provincial archives.(25)
1912	A Geographic Section is established in the Surveyor General's Branch B.C., to produce lithographed pre-emptor sheets to accommodate requests for maps from land seeking settlers. (34p.46)	1921	Ontario utilizes aircraft to make sketch maps of forested areas. (28 p.242)
1912	The Boundaries of Manitoba, Ontario and Quebec are extended northward to their present limits. (21-2 p.272 and 28 p.234))	1922	The Board on Topographical Surveys and Maps is formed to attempt coordination between the three federal topographical agencies: Geological Survey, Topographical Survey at Interior, and the Survey Division Department of Militia and Defence. (19 p.38)
1913	A common horizontal position datum is adopted by the U.S. and Canada. (21-4 ch 2)	1922	The Topographical Survey Branch, Department of the Interior, is renamed The Topographical Survey of Canada. The Geological Survey refuses to recognize this title. (19 p.37)
1913	CGS <i>Acadia</i> commissioned and served for 56 years in CHS service. (21-2 p.216)	1922	The first aerial photographs of Manitoba are taken to assess their value for mapping. (25)

1922	The Manitoba-Ontario boundary extended from Winnipeg River north 180 miles. (See reference for 1897)	1926	The Nova Scotia Dept. of Lands and Forests is established. It fields its first survey party in 1934 to start defining the boundaries of Provincial Crown Land holdings. By 1934, 12 survey parties were in the field. (25)
1922	<i>The Journal of the Dominion Land Surveyors Association</i> commences publication. This journal will evolve into <i>Geomatica</i> . (Files of the Canadian Institute of Geomatics)	1926	The survey of the 7th baseline, the only one to extend across Ontario, is commenced. It is completed in 1931. (28 p.247)
1923	The first version of the National Topographic System (NTS) is introduced by the Board on Topographical Surveys and Maps. (19 p.39 and 217)	1927	Second version of the NTS sheet layout introduced. (19 p.83)
1923	The Ontario Department of Public Highways publishes the first Ontario road map. (29 p.245)	1927	The first 8-Mile sheet of the NTS is published (94 SE Hudson Hope). (6 23-4 p.80 and 19 p.94)
1924	The Survey Division, Dept. of National Defence, becomes the Geographical Section, General Staff (GSGS). (9 1924-1, p.27-43)	1927	The 1927 North American Datum (NAD 1927) is adopted by Canada and the U.S. (21-4 ch 2)
1924	Experiments are carried out at GSGS using vertical air photos for mapping at the 1-Inch scale. (9 1924-2 p.363-367)	1927	The Judicial Council of the Privy Council upholds Newfoundland's claim to Labrador. (4 36-2)
1925	The Board on Topographical Surveys and Maps replaced by The Board on Topographical and Aerial Surveys and Maps by Privy Council Minute 13941/2 of Sept 1st. (19 p.39)	1928	The Canadian Hydrographic Survey is renamed the Canadian Hydrographic Service. (21-2 p. 107)
1925	RCAF purchases Vickers Vidette flying boats. Oblique photographs taken from this type of aircraft are used for 4-Mile mapping. (19 p.85)	1928	The first gyrocompass is installed (in <i>CGS Acadia</i>). (21-2 p. 108)
1925	The micrometre-reading T3 transit invented by Heinrich Wild in Switzerland is introduced in Canada. (21-3 p.30)	1928	Hydrographic surveys of Great Slave Lake are commenced. (21-2 p. 107)
1925	Aerial photography is taken of the proposed route of the railway from The Pas to Churchill or Fort Nelson. (25 Manitoba)	1928	First vertical aerial photography is taken in New Brunswick. (43 70th Annual Report)
1925	The National Air Photo Library (NAPL) is established at Interior. (PC 180 Feb.7, 1925)	1928	After a lapse of 83 years, the position of Surveyor General for Ontario is reestablished within the Dept. of Lands and Forests. Lewis Rorke is appointed to the post. (28 p.237)
1925	Interdepartmental Air Survey Committee (IASC) is authorized. It is succeeded by the Interdepartmental Committee on Aerial Survey (ICAC) in 1944. (PC 2703, 17 Apr. 1944)	1929	First extensive aerial photographic survey in British Columbia carried out in conjunction with PGE Railway resources survey. The photography was carried out by the RCAF and by the end of the 1930 flying season approximately 16,600 square miles had been covered (33 p. 15)
1925	Treaty of Washington amended to establish a permanent International Boundary Commission. (21-4ch2)	1929	Radial Line Plotting is started at GSGS. This method of mapping from air photos was developed by Lt Martin Hotine RE (later Brigadier) and published in a British Army manual in 1927. The method was used in ASE until 1946 and in Topographical Survey until about 1948. (21-4 ch 3)
1925	Alberta-N.W.T. boundary is surveyed between Slave River and Little Buffalo River. See also 1950-54. (21-4 ch 2)	1929	Vertical air photography is undertaken by the <i>Compagnie franco-quebecoise</i> in the St Lawrence Valley. (25)
1926	Canada's first aeronautical chart is published by Dept. of the Interior. (6 23-4 p. 80)	1930	The Wild T2 Theodolite is introduced in B.C. government surveying. (Report of Lands Service of B.C. to Dec. 31 1960)
1926	The first sheet of the NTS 4-Mile Series is published. (19 p.83)		

1930	Northern air route charting is begun as a joint Interior-GSGS project. (6 23-4 p.81)		surveys, hydrographic surveys, air chart production, maps of the Chief Geographer's Series, general maps at small scales, map reproduction and distribution. (The Mines and Resources Act Edw.Vfflc.33 of Dec. 1st, 1936)
1930	The first electronic echo sounder with graphical recorder is installed in a CHS vessel to replace the hand leadline. (5 p.92-98)		
1930	The Hydrographic Service makes first use of aerial photography for the mapping of shorelines. (5 p.82)	1936	The Government of British Columbia launches an aerial photographic program. In 1937 2,700 photos are taken by the B.C. Forest Branch for forest inventory purposes (33 p. 15)
1930	A new Manitoba Surveys Act is passed and a Surveys Branch is organized under S.E. McColl, the first Director of Surveys.	1936	The GSGS acquires a Zeiss Multiplex Photogrammetric Plotter. This is the first such instrument in Canada. (4 42-2 p. 177)
1930	The Manitoba-Ontario boundary is surveyed as far as Island Lake, a continuation from the point reached in 1897. (21-2 p.269 and 28 p.178)	1937	The Manitoba-Ontario boundary is surveyed a further 114 miles from the point reached in 1930. (21-2 p.269 and 28 p.178)
1931	The survey of the Ontario-Quebec boundary is completed. The last leg of 164 miles is run during 1930-31. (28 p. 178)	1938	Manitoba Dept. of Highways publishes first road map of the Province. (25)
1932	The 1:25,000 topographic map scale is adopted for large-scale military mapping by the War Office. The Canadian Military conformed to this decision. (19 p.III)	1940	The Nova Scotia Dept. of Mines adopts the NTS 1-Mile Series as the basis for locating and plotting all mining claims in the Province. (25)
1932	Five Vedette flying boats are turned over from the Federal to Manitoba governments. These form the nucleus of the Provincial Air Service. (25)	1941	In February the U.S. Military Attache expresses an urgent need by the U.S. armed forces for air charts between Montana and Alaska. To provide these, a joint program was worked out in which the U.S. Army Air Corps would provide Trimetrogon photography of this area while Canada would establish ground control. After the U.S. entry into the War this project is extended to cover much of northern Canada with 8-Mile charts. This is the only instance where foreign aid was given to NTS mapping. (6 33-4 p.99)
1933	The Topographical Survey of Canada is renamed the Topographical and Air Survey Bureau. (19 p.217 and 21 p.203)		
1933	The Board of Topographical and Aerial Surveys and Maps (see 1925) is renamed the Interdepartmental Committee on Air Surveys and Base Maps. (19 p.217)		
1933	The responsibility for air chart production is transferred from the Chief Geographer's Section to the Legal Surveys and Maps Division. (19p.95)	1942	In England the Canadian and British Army mapping units are introduced to the slotted template method of mapping by the American Army. (41 p.772)
1933	The Chief Geographer's Branch is established to produce and keep up-to-date the sheets of the Chief Geographer's Series and various small-scale maps required by the government. (Annual Report of Interior)	1944	The spring-type portable gravimeter is used for the first time. (21-4 ch 2)
1936	The Dept. of the Interior is disbanded. The survey work is taken over by two agencies in the new Department of Mines and Resources. The first of these is the Bureau of Geology and Topography in the Mines and Geology Branch. The second is the Hydrographic and Map Service in the Surveys and Engineering Branch. The topographers of both the Geological Survey and Interior are grouped in the first of these agencies. The second agency, headed by the Surveyor General, is responsible for legal	1944	The NTS 8-Mile Series is completed though many northern sheets contain blank areas. (19 p.98)
		1944	The aerial photography of New Brunswick is begun. The vertical photography is taken by RCAF at about 20 chains to one inch. Coverage is completed by October 1945.(43 No 108 and 109)
		1944	K.G. Chipman and G. Hanson report on the status of topographic mapping in Canada. (Can. Inst. of Mining and Metallurgy, Transactions, 1944 Vol.XLVII p.99)

1945	A Photogrammetry Division is formed in the Dept. of Lands and Mines of New Brunswick. (43 No 109)	1948	The British Columbia Department of Lands and Forests charts a helicopter for survey work. In the same summer a Geodetic Survey party under F.P. Steers uses a helicopter for work along the Alaska Highway. These are the first Canadian survey agencies to use this new form of transportation. (34 p.Y46 and 21-3 p.96)
1945-53	B.C.-Yukon boundary surveyed from Alsek River west to within 38 miles of the Alaska boundary. This portion of the boundary is heavily glaciated and can not be surveyed. (21-4ch2)	1948	The Manitoba-Ontario boundary survey is completed to Hudson Bay. (28 p. 178)
1946	The Geographical Section of the General Staff renamed the Army Survey Establishment. (21-3 p. 169)	1948	NTS 1-Mile coverage of Prince Edward Island is completed. (22, NTS index maps)
1946	Major Church's "survey class" is moved from the Nova Scotia Technical University in Halifax to Lawrencetown, Annapolis County. It is renamed the Nova Scotia Land Survey Institute. (25)	1948	The Provincial Air Photo Library is established in Winnipeg with a basic stock of RCAF and Forest Inventory prints, over 40,000 in all. (25)
1946	Ontario's Forest Resource Inventory, as it is known today, is established. Five percent of the province's forest resources are inventoried each year, resulting in a 20-year mapping cycle for each forest management area. Forest resource maps are produced from b&w vertical photography. (25)	1949	The Department of Mines and Resources is reorganized as the Department of Mines and Technical Surveys. Within this department the Surveys and Mapping Branch is formed to include the Geodetic Survey, Legal Surveys and Aeronautical Charts, the Hydrographic Service, the Topographical Survey and the Map Compilation and Reproduction Division. (Mines and Technical Surveys Act 13 Geo.VI c. 17, of Dec. 10, 1949)
1947	Federal Dept. of Mines and Resources is reorganized. The two survey organizations of the 1936 reorganization are joined in a new Surveys and Mapping Bureau. The Bureau is in the Mines, Forests and Scientific Services Branch and contains: Topographical Survey, Hydrographic Service, Geodetic Survey, Legal Surveys and Air Charts, Map Compilation and Reproduction Division. (PC 37/4433 of Nov. 1, 1947)	1949	The B.C. Dept. of Lands and Forests installs Multiplex photogrammetric plotting equipment. (34 p.Y47)
1947	Gurley Transits are replacing staff compasses on Crown Lands surveys in New Brunswick. (43 No 112)	1949	Geodetic field operations using Shoran are started following successful trials in 1948. (21-4ch2)
1947	Canada's first long-range mapping program is approved by the Cabinet Defence Committee. Among other items it calls for the completion of the 4-Mile Series within 20 years. (19 p.86)	1949	Newfoundland joins Confederation (3 under Newfoundland)
1947	After 164 years of surveying Ontario's townships, Ontario starts to annul townships and parts of townships. Annulments are carried out where the survey fabric has become so obliterated that it is no longer economical or advisable to continue surveying in relation to old township boundaries or subdivision lines. (28 p.253)	1950	The NTS 1:253,440 scale is changed to 1:250,000 and the Universal Transverse Mercator Projection is adopted for all federal topographic mapping at scales of 1:250,000 and larger. (19 p.88)
1948	The Geographic Board of Canada becomes the Canadian Board on Geographical Names. (19 p.209)	1950	The NTS 1:63,360 scale is changed to 1:50,000. (19 p.49)
		1950	New Brunswick Land Surveyors' Act is passed. The designation Deputy Land Surveyor is changed to New Brunswick Land Surveyor. (2E C161, Statutes of New Brunswick)
		1950	Copies of all Manitoba township plans in stock in the Dept. of Mines and Technical Surveys are transferred to the Dept. of Natural Resources in Winnipeg. (25)
		1950	The enlargement of 1:63,360 sheets to 1:50,000 means that at most latitudes the sheets are too wide for the military presses. It is decided to publish them as half-sheets. This restriction is lifted in 1967 when larger presses become available. (19 P.49)

1950	Two Wild A5 photogrammetric plotters are purchased by the Canadian government (Army Survey Establishment and Topographical Survey). Canada enters a new phase in topographic mapping. (21-4 ch 12)	1957	The Tellurometer, an electronic measuring device in which distances are computed by timing the transmission of radio waves, is first used in Canada. (4 Proceedings of CIS Annual Meeting of 1957)
1950-53	Remaining portion of the Alberta-British Columbia boundary surveyed. (21-4 ch 2)	1957	The Decca Navigation System is installed on <i>CHS Baffin</i> . This is the first electronic system with acceptable accuracy for positioning offshore features by the Canadian Hydrographic Service. (5 P.212)
1950-54	Survey of Alberta-N.W.T. boundary completed. See also 1925. (21-4 ch 2)		
1951	The Canada Lands Surveyors Act replaces the Dominion Land Surveyors Act of 1908 as CLS Act 1951,(2nd Session),c.4, s.1. This Act has been amended by R.S.C. 1970, c.L-5; amended by 1972, c. 17,1974-75-76, c.108; and 1976-77, c.30. See the <i>Manual of Instructions for the Survey of Canada Lands</i> . See also 1977.	1957	The Geodetic Survey uses an electronic computer (IBM 650 owned by the University of Ottawa) for the first time. (21-4 ch 2)
1951	The Association of Nova Scotia Land Surveyors is formed at Halifax.(12 p.44)	1957	Last first edition of the NTS 1:125,000 Series published, Goudreau 42C SE. Revision of sheets was continued until 1974. (19 p.78)
1951	Interdepartmental Committee on Air Charts (ICAC) confirmed by Cabinet Decision No 131 of Nov. 27.	1958	The final sheet of the English version of the 3rd Edition of the <i>National Atlas</i> is produced. (19p.168)
1952	The Geodimeter, an electronic distance measuring device, is first used in Canada. (4 XVII-3)	1958	The NTS 8-Mile Series converted to 1:500,000. Elevations remain in feet because this series is the base for air charts. (6 23-4 p.79)
1952	New Brunswick starts a new series of cadastral maps at a scale of one-half mile to an inch. This is called the 40 Chain Cadastral Map Series. (25)	1958	The position of Examiner of Surveys, under Ontario's Land Titles Act is created for the purpose of examining the quality of plans entering the province's Land Titles offices. (28 p.267)
1953	The Association of Newfoundland Land Surveyors is constituted at St John's. (12 p.45)	1958	A revision to Ontario's Survey Act provides for the standardization of the use of survey monuments in cadastral surveys. The kind and form of survey monuments, where they are to be used, and how they are to be designated on plans, is now prescribed by regulation. (28 p.267)
1953	Kelsh Plotters became the "workhorse" of map compilation in both ASE and Topo Svy. (21-4 ch3)		
1953	The 1:25,000 Series is brought into the NTS. (6 12-1 p.68)	1958	Ontario introduces the use of "reference plans". Based on actual surveys, reference plans simplify the preparation of legal descriptions of land by providing a graphic alternative to laborious written metes and bounds descriptions. (28 p.258)
1954	A private act to incorporate the Association of New Brunswick Land Surveyors is passed. (C 97. SNB 1954)		
1954	Wild A7s and A8s purchased by ASE and Topographical Survey. (21-4 ch 3)	1958	The survey of the B.C.-Yukon boundary is completed except for the heavily glaciated portion. (21-4 ch 2)
1954-58	Saskatchewan-N.W.T. boundary surveyed. (21-4ch2)	1959	The Army Survey Establishment commences work on the Military Town Plan Series. (19 p.113)
1955	The International Great Lakes Datum is established by U.S. and Canada. (21-4 ch 2)	1959	NTS 1:50,000 coverage of New Brunswick is completed. (22, NTS index maps)
1955	The Geodetic Survey uses automatic levels for the first time. (21-4 ch 2)		
1956	NTS 1:50,000 coverage of Nova Scotia is completed. (22, NTS index maps)	1959	The Atlantic Region of the CHS established in Halifax. It was subsequently moved to the Bedford Institute of Oceanography in 1962. (5 p.221-2)
1956	<i>The British Columbia Atlas of Resources</i> is published by the B.C. government. (19 p. 174)		

1959	Wild A9 purchased by Topographical Survey for use with superwide angle photography. This experiment was not considered successful and by 1976 superwides were no longer in use by the federal government. (21-4 ch 3)	1962	The Topographical Survey acquires the Aerodist System, an airborne distance measuring system. (21-4 ch 2)
1959	The Geodetic Survey uses the portable Bilby Tower for the first time. (21-4 ch 2)	1963	The National Research Council completes construction of the world's first Analytical Plotter. It is displayed at the Second International Photogrammetric Conference in Ottawa. (21-4 ch 12)
1959	Ontario enacts the Boundaries Act as a means of resolving boundary disputes. (28 p.268)		
1959-60	Manitoba-N. WT. boundary surveyed. (21-4 ch 2)	1963	The Canadian Geographic Information System (CGIS) is initiated by the Agriculture Rehabilitation and Development Agency (ARDA). This was the world's first GIS. (3 under Geographic Information Systems)
1960	The Third Edition of the <i>Atlas of Canada</i> is published in French. This is the first time any edition has appeared in French. (19 p. 168)	1964	Publication of separate military and civilian editions of NTS maps is discontinued. All copies of the NTS 1:25,000, 1:50,000 and 1:250,000 Series will carry the UTM grid after 1964. (19p.50)
1960	<i>The Economic Atlas of Manitoba</i> is published as a joint project of the University of Manitoba and the Provincial Government. (19 p.175)	1964	The Central Region of the CHS is established in Ottawa and subsequently moved to Burlington, Ont. It is now known as the Bayfield Institute. (21-4ch8)
1960	For the first time the T3 theodolite, Model 4 Geodimeter and aluminum observation towers used by New Brunswick government surveyors. (25)	1964	The 40 Chain Cadastral Map Series, started in New Brunswick in 1953, is completed. (25)
1960	The International Boundaries Act reenacted in 1960, and amended in 1970, gives statutory authority to the Canadian Boundary Commissioner, under the administration of the Secretary of State for External Affairs. (IBC Act)	1964	The Air Photo Production Unit (APPU) is transferred from the RCAF to S&M. (PC 318 of 1964)
1960	The LaCoste and Romberg portable gravimeter is used in Canada for the first time. (21-4 ch 2)	1964	The National Advisory Committee on Control Surveys and Mapping (NACCSM) is formed by PC 1568 of 9 Oct.)
1961	Groom, the first comprehensive Canadian computer program for processing geodetic data, is developed by Klinkenberg and Wickens in the Geodetic Survey. (21-4 ch 2)	1965	Statistics Canada starts the Geographically Referenced Retrieval System (GRRS). (3 under Geographic Information Systems and 21-4 ch 15)
1961	The Canadian Board on Geographical Names is reorganized as the Canadian Permanent Committee on Geographical Names. (19 p.209)	1965	The DND role in NTS mapping is reduced to assisting EMR in field work. The responsibility for all domestic topographic mapping is assigned to M&TS. (TB 582565 of 24 Oct. and TB 640941 of 2 July)
1961	The 1:1,000,000 World Aeronautical Chart coverage of Canada is complete in 64 sheets. (6 23-4 p.79)	1965	A new program of urban mapping at 1:2000 and 1:1000 started in New Brunswick. (21-4 ch 4)
1961	Remaining portion of the Manitoba-Saskatchewan boundary surveyed to the 60th parallel. (21-4 ch 2)	1965	The Quebec Department of Lands and Forests establishes its service of photogrammetry and cartography. (25)
1961	The first comprehensive set of control specifications for Canada is published by the Surveys and Mapping Branch. These became de facto national standards. (21-4 ch 2)	1965	The Geodetic Survey uses Aerodist to extend the primary horizontal control network across Hudson Strait and the mouth of Hudson Bay. (21-4ch2)
1962	The Surveys and Mapping Building at 615 Booth St. Ottawa is opened with the objective of bringing all federal survey operations into one location. (4 XV-8 p.463)		
1962	The CHS is transferred to the new Marine Sciences Branch, M&TS. (S&M Annual Report p.21)	1965-68	The <i>Atlas du Quebec</i> is published by the <i>Bureau des recherches économiques du Quebec</i> , in four sections (Agriculture, Industry, Tertiary Sector and Population). (19 p. 177)

1966	<i>The Atlas of the Northwest Territories</i> is published by the Federal Government. (19 p. 177)	1968	Nova Scotia commences 1:10,000 ortho-photo mapping program under the APSAMP initiative. The series was completed in 2010 sheets by 1985. A digital line map series at the same scale was started in 1983 and is scheduled for completion in 1996. (21-4 ch 4)
1966	The Army Survey Establishment is renamed the Mapping and Charting Establishment. (19 p.37)		
1966	The Dept. of Mines and Technical Surveys is reorganized as the Dept. of Energy, Mines and Resources. The CHS leaves the Surveys and Mapping Branch for the newly created Dept. of Environment. When the Dept. of Fisheries and Oceans is created in 1979 the CHS becomes a part of this department. (Energy, Mines and Resources Act, 1966)	1968	New Brunswick commences 1:10,000 ortho-photo mapping program under APSAMP initiative. The series was completed in 1985 in 2718 sheets. Digital line mapping at the same scale was started in 1984 with 1888 sheets when completed in 1994. At present these sheets are not contoured but it is planned to add contours in the near future. (21-4 ch 4)
1967	The Association of Prince Edward Island Land Surveyors formed. Its act of incorporation is passed on Apr. 25, 1968. (12 p.220)	1968	Prince Edward Island commences 1:5000 ortho-photo mapping program under APSAMP. The series was completed in 1973 in 1256 sheets. Urban mapping at 1:2500 scale was started in 1975 and completed for all places with populations over 300 in 1980 in 243 sheets. A digital series at 1:1000 was started for Summerside and Charlottetown. Summerside was completed in 1988 (24 sheets) and Charlottetown in 1992 (38 sheets). In 1986 a 1:10,000 uncontrored digital series was started. Coverage was completed in 1990 in 212 sheets. (21-4 ch 4)
1967	The Survey Act establishing Coordinate Survey Systems and integrated survey areas is passed in New Brunswick. (C 23. SNB 1967)		
1967	The size restriction of sheets of the NTS 1:50,000 Series is lifted, and no further half-sheets will be produced. When half-sheets come up for revision they will be published as full sheets. (19 p.49)		
1968	The Geodetic Survey absorbs the field survey component of Topographical Survey. (21-4 ch 2)	1969	MCE purchases four Kelsh 200 plotters (the Giant Kelsh) for use with super-high altitude photography. (21-4 ch 3)
1968	The NAPL and APPU are combined in the Air Photo Division, S&M Branch. (TB 682565 of July 15)	1969	The <i>Economic Atlas of Ontario</i> is published by the University of Toronto Press. (19 p. 173)
1968	The Atlantic Provinces Surveys and Mapping Plan (APSAMP) is approved in principle by the Atlantic Development Board. This plan requested funds from the Board to modernize surveying and mapping in the Atlantic Region. (21-4ch4)	1969	The <i>Atlas of Saskatchewan</i> is published by the University of Saskatchewan. (19 p. 175)
1968	In S&M Branch reorganization, air charting is transferred from Legal Surveys to Map Production Division. (S&M annual report)	1969	The <i>Atlas of Alberta</i> is published by a partnership of the University of Alberta and the Provincial Government. (19 p. 176)
1968	In a Federal departmental reorganization, the Geographical Branch EMR is transferred to the S&M Branch. (S&M Annual Report 1968-69)	1969	The presidents of the provincial land surveyors' associations meet to discuss problems of mutual interest. This arrangement culminates with the 1976 incorporation of the Canadian Council of Land Surveyors (CCLS). (28 p.282)
1968	The Ontario Geographic Names Board is established. The Surveyor General for Ontario is ex-officio a member. (21-4 Appendix B)	1969	The Ontario Coordinate System, a modified 3° transverse Mercator projection and grid system is adopted by the Surveys Act. (25)
1968-94	Newfoundland produced 1:12,500 scale resource mapping with 52 sheets completed before the series was discontinued in 1984. Municipal mapping continues at scales of 1:2500 and 1:5000 with over 3800 sheets published by 1994. Since 1992 all municipal mapping has been in digital form. (21-4 ch 4)	1970	The final sheet of the 1:250,000 Series is published. (19 p.92)
		1970	The Gestalt Photomapper is developed by Hobrough Limited of Vancouver. (G.L. Hobrough, President) (21-4 ch 6)

- 1971 The Boase Report (Bureau of Management Consultants) of 1971 results in the decentralization of the Legal Surveys field staff to nine regional offices. (Boase Report file, Legal Surveys, Ottawa)
- 1971 The second transcontinental line of precise levels is completed. This line followed main highways. (21-4ch2)
- 1972 Canada and the U.S. agree to cooperate in updating their horizontal control networks and to adopt a revised positional datum. This is the de facto commencement of the NAD 83 project. (21-4 ch 2)
- 1972 On the advice of Dr Tuzo Wilson, a monochrome version of the NTS 1:50,000 series was designed. A "Wilderness Line" was drawn across the index map of the series to separate the settled and developed south from the undeveloped north. North of the line, monochrome sheets will be the normal production. 3336 sheets fall south of the line while approximately 9660 lie to the north. (19 p.54)
- 1972 Quebec launches its *Système québécois de référence cartographique (SQRC)*. In this system topographic scales are provided at 1:20,000, 1:10,000, 1:5000, 1:2000 and 1:1000. By 1993, 2056 sheets had been published at 1:20,000 scale, all between the parallels of 45° and 51°. Of these 1456 are digital. Most of Quebec's municipal mapping is at 1:1000 but there are some published at 1:2000 for special purposes. (21-4 ch 4)
- 1972 Newfoundland pulls out of APSAMP (see also 1968). (21-4 ch 4)
- 1972 The survey of the Manitoba-Saskatchewan boundary completed. This boundary was defined in 1881 as the center of the road allowance between ranges 29 and 30 west of the principal meridian. By 1930 it had reached township 40 and at intervals to township 68. In 1961 the survey was resumed, and completed in 1972. (21-4 ch 2)
- 1973 The Doppler Survey System, instrumentation that determines the position of a radio receiver by comparing the reception of signals from passing satellites, is used for the first time in Canada. (4 34-4 p.287)
- 1973 The Land Registration and Information System (LRIS) takes over from APSAMP but only for the Maritime Provinces. It is under the administration of the Council of Maritime Premiers (CMP) but with funding from the Department of Regional Economic Expansion (DREE). (36 p.125)
- 1973 Manitoba obtains a Wild B8S photogrammetric plotter for precise aerotriangulation. (25)
- 1973 New comprehensive survey control specifications are published by the Surveys and Mapping Branch, superseding the 1961 specifications. The concept of error ellipses is introduced. These specifications became de facto national standards. (21-4 ch 2)
- 1974 The Newfoundland Geographical Names Board is established. In 1991 its name is changed to the Newfoundland and Labrador Geographical Names Board. (21-4 Appendix B)
- 1974 The Saskatchewan Geographical Names Board is established. It is chaired by the General Manager of the Central Surveys and Mapping Agency. (21-4 Appendix B)
- 1974 Last revised sheet of 1:125,000 Series published, Glacier Park 82N SW. (19 p.78)
- 1974 The 4th Edition of the *National Atlas* published. (19 p. 169, and 35)
- 1974 The Geodetic Survey baseline project is started. This will set out precisely measured baselines across the country for the testing of EDM equipment. This is reminiscent of the program in 1785 to set out accurately surveyed meridian lines for the testing of surveyors' compasses. (21-4ch2)
- 1975 The Geodetic precise levelling is extended north of the Arctic Circle for the first time. The line runs along the bank of the Mackenzie River. (21-4 ch 2)
- 1975 Saskatchewan starts a photo-mapping program at 1:20,000 scale. Because of the flat terrain ortho-photo mapping is not required. Coverage of all areas surveyed under the DLS system was completed by 1980. (25)
- 1975 Alberta starts a 1:25,000 topographic series covering the Province's oil sands areas, i.e. most of quadrangles 74D and 84A. The series was discontinued in 1979.(21-4 ch 4)
- 1975 The Alberta Historic Sites Board is established by the Alberta Historical Resources Act. The Geographical Names Committee makes recommendations to this Board on matters concerning geographical names. (21-4 Appendix B)
- 1975 The Ontario Base Mapping program is given a trial run. It is found to be satisfactory leading to complete implementation in 1977. (21^ ch 4)
- 1976 The Inertial Survey System (ISS), a surveying device that measures and records the movement in three dimensions of the vehicle in which it is installed (helicopter, truck, etc.), is first used in Canada. (4 34-1 p.41)

- 1976 Gestalt GPM2 (an automated orthophoto plotter) is purchased by S&MB. (21-4 ch 3)
- 1976 Satellite Doppler used for the first time by Manitoba government surveyors. (25)
- 1976 The Central Survey and Mapping Agency is established in Saskatchewan. (25)
- 1976 B.C. announces the British Columbia Geographic System of Mapping which, along with the NTS and B.C. Rectangular System, provides a standard systems for planimetric mapping. B.C. scales are: 1:20,000, 1:10,000, 1:5000, 1:2500, 1:2000, 1:1250, 1:1000 and 1:500. (25, see publication *B.C. Standard System of Mapping* by B.C. Dept. of Environment, 1976)
- 1977 EMR establishes the Task Force on National Surveying and Mapping under the leadership of Dr P.A. Lapp. One of the findings of the task force was the need for topographic data in digital form. The National Topographic Data Base (a digital database) was started to fill this need. See also 1990. (21-4 ch 3)
- 1977 Ontario launches its Ontario Base Mapping program (OEM). At first these maps were produced by traditional cartographic methods but since 1986 all production has been in digital form. The OEM scales are 1:20,000 for Northern Ontario, 1:10,000 for Southern Ontario and 1:2000 for municipal mapping. The northern limit of systematic mapping is 51° latitude. Total OEM coverage will comprise approximately 13,000 sheets. (19 p. 158 and 21-4 ch 4)
- 1977 The Canada Lands Surveys Act is amended. This expanded the DLS commission to include hydrographers, photogrammetrists, etc. and changed the DLS designation to CLS. See also 1951. (R.S.C. 1970:amended by 1972, c.17,1974-75-76, C.108; and 1976-77, c.30)
- 1977 The *Commission de toponymie du Quebec* is established within the framework of the Charter of the French Language. (21-4 Appendix B)
- 1978 Work on the NTS 1:25,000 Series is discontinued. (19 p.1 19)
- 1978 Federal funding withdrawn from LRIS. (36 p.126)
- 1979 Manitoba starts a 1:20,000 series of maps of northern settlements. (21-4 ch 4)
- 1979 The Alberta Bureau of Surveying and Mapping launches a metric series of digital topographic maps at 1:20,000 for resource development, 1:5000 for rural property management and 1:1000 for municipal mapping. The 1:20,000 Series, called the Provincial Digital Base Mapping (PDBM) will be complete in 2775 sheets with 10 m contours by 2000. In addition, two large-scale programs are in operation: the Municipal Integrated Surveys and Mapping (MISAM) program that provides 1:1000 and 1:5000 contoured digital mapping with over 5000 sheets published; and the Parcel Mapping (PM) program which takes care of the smaller villages and hamlets mainly at 1:5000 scale. (21-4ch4)
- 1979 A new format for Canadian 1:500,000 air charts is introduced. By using larger sheets and printing both sides, the number of charts is reduced from 220 to 51. (6 23-4 p. 112)
- 1979 The LRIS in the Maritimes adopts a revised geodetic position datum called Average Terrestrial System 1977 (ATS 77). (21-4 chs 2 and 4)
- 1979 The Bureau of Surveying and Mapping is created in Quebec. (21-4 ch 4)
- 1979 After some 180 years of use, the last entry is made in Ontario's *Domesday Books*. Instituted in the early 1800s, the *Domesday Books* contain a record of all lands alienated by the province since the first patent was issued in 1793. The books first were replaced by a computer based land index listing. In 1991 this was replaced by a more modern land index system. (25)
- 1980 The Global Positioning System (GPS) is used for the first time in Canada. This system obtains the precise position of a receiver by measuring the distance of the receiver from four or more passing satellites whose orbits are known precisely. (4 36-1 p.30)
- 1980 Nova Scotia increases its academic standards to the baccalaureate level for becoming a Nova Scotia Land Surveyor.
- 1980 Complete coverage of Canada by sheets of the International Map of the World (IMW) available for the first time. (22 EMR map Index for 1980)
- 1980 Sheets of the *System quebecois de reference cartographique (SQRC)* start to be published by digital compilation. (25)
- 1980 S&MB and MCE both purchase Marconi Anaplot digital plotters. This instrument is the commercial version of the NRC digital plotter. (21-4 ch 12)
- 1980 A new format for Canadian World Aeronautical Charts has been adopted. The new coverage reduces the number of sheets from 64 to 18. (6 23-4 p. 112)
- 1981 Canada and the U.S. agree to update their vertical control networks. This is the start of the NAVD88 project. (21-4 ch 2)

1981	Alberta Bureau of Surveying and Mapping established. (21-4 ch 4)	1986	UNB produces Canada's first authoritative gravimetric geoid under the leadership of Dr Peter Vam'cek. (21-4 ch 2)
1981	The LRIS survey monument program is completed. (36 p. 127)	1986	The NAD83 continental adjustment is completed with the cooperation of the U.S. (21-4 ch 2)
1882	Digital mapping is now standard practice in the Quebec Department of Energy and Resources. (25)	1987	The Surveys and Mapping Branch of EMR is dissolved and replaced by the Canada Centre for Surveying, the Canada Centre for Mapping, the Canada Centre for Remote Sensing, the Geographic Information Systems Division and the Cartographic Information and Distribution Centre. (4 43-2 p. 164)
1983	Nova Scotia begins digital urban mapping at 1:2000 scale with Halifax-Dartmouth being done at 1:1000. Because of budget limitations only eight urban areas had been completed by 1993. (36 p. 127)		
1984	Ontario produces its first digital OBM map. Henceforth all production will be digital. (21-4 ch4)	1987	The Geomatics Industry Association of Canada (GIAC) succeeds the Canadian Association of Aerial Surveyors (CAAS) which was formed in 1961. (21-4 ch 6)
1985	The Association of Canada Lands Surveyors is formed. In due course it will be incorporated by the Canada Lands Surveyors Act which at the time of writing (August 1996) has not been passed.	1987	The Geodetic Survey starts a comprehensive program to establish GPS precise horizontal positions to primary bench marks. This is being done to improve geoid estimation. (21-4 ch 2)
1985	NTS 1:50,000 coverage of Newfoundland and Quebec completed. (22, NTS index maps)	1987	The Yukon Geographical Names Board is established. (21-4 Appendix B)
1985	Geodetic Survey phases out field astronomy. This aspect of geodesy is no longer needed because of advances in satellite positioning methods. (21-4 ch 2)	1987	The Canada Centre for Mapping purchases an Intergraph Analytical Plotter. (21-4 ch 3)
1985	The Global Positioning System is first used for establishing primary horizontal control. (21-4 ch2)	1987-93	The <i>Historical Atlas of Canada</i> is published in three volumes by the University of Toronto Press. (4 44-4 p.444)
1986	NTS 1:50,000 coverage of Manitoba is completed. (22, NTS index maps)	1987	<i>L'Inter Atlas: Les Ressources du Quebec et du Canada</i> is published by Laval University. (25)
1986	Manitoba's Surveys and Mapping Branch obtains a Wild TA2 precision plotter for the first phase of its digital mapping program. (25)	1988	NTS 1:50,000 coverage of Alberta, British Columbia, Saskatchewan and Yukon is completed. (22, NTS index maps)
1986	British Columbia announces its Provincial Baseline Digital Atlas program which will provide provincial coverage at three map scales: a single sheet map at 1:2,000,000; an 84 sheet provincial coverage by digital NTS 1:250,000 sheets, and the 7000 sheet coverage by TRIM 1:20,000 sheets (see 1986 below). (21-4 ch 4)	1988	Canadian precise levelling reaches the Arctic Ocean for the first time with the completion of winter levelling from Inuvik to Tuktoyaktuk. (21-4ch2)
1986	British Columbia launches its TRIM (Terrain Resource Information Management) program designed to map B.C. at 1:20,000 scale. When completed the system will comprise some 7000 sheets. By December 1995, over 5900 sheets were in hand. The TRIM mapping is contoured and digital. Its high accuracy allows it to be used for GIS operations.	1988	Canada joins GOTEX (Global Orbit Tracking Experiment), a successful international experiment to improve the accuracy of GPS orbit prediction. This is done by making precise GPS measurements at selected sites. (21-4 ch 2)
1986	Ontario implements its provincial topographic database from digital OBM data. (25)		Manitoba Surveys and Mapping Branch starts a 1:10,000 mapping program to cover the southern half of the Province. The mapping of northern settlements is being done at the same scale. All mapping is to be contoured and Digitally compiled. The system will eventually comprise a total 1100 sheets. (21-4 ch 4)

1988	The proclamation of a new Surveyors' Act restructures the Association of Ontario Land Surveyors and provides for an expanded profession of land surveying. The practice of cadastral surveying continues to require a licence. Persons practicing in the fields of geodesy, photogrammetry and hydrography, who meet the Association requirements and qualifications, become members of the Association and are issued a certificate of registration. Every member of the Association has the right to use the title "Ontario Land Surveyor" and the initials OLS. (25)	1991	<i>The Atlas of Newfoundland and Labrador</i> is published in a joint venture between Memorial University and Breakwater Press. (4 46-1 p.68)
		1992	MCE purchases Intergraph Interact workstations. In 1993, 24 Intergraph Intermap workstations are acquired. (21-4 ch 3)
		1992	The height of Mount Logan, Canada's highest mountain, is obtained by GPS methods. The height is 5959m plus or minus 3m. The uncertainty is due to lack of knowledge of the geoid in the Mount Logan area. (21-4 ch 2)
1989	Decision made by Council of Maritime Premiers to disband LRIS. However, this action is not taken until 1994. (36 p. 127)	1992	(GSD 91) is officially reconized as Canada's national geoid. A geoid prediction package is made available for public use. (21-4 ch 2)
		1994	NTS 1:50,000 coverage of Northwest Territories mainland is completed. Approximately 60% of the Arctic Islands is also covered. (22, NTS index maps)
1989	The New Brunswick Geographic Information Corporation Act is passed. This brought together in one agency the responsibility for control surveys, mapping, registry and assessment. (CN 5.01 SNB 1989)	1994	On March 31, LRIS is closed down. (36 p. 127)
		1995	Fifth Edition of the <i>National Atlas of Canada</i> published. This edition was started in 1974 with the first sheet published in 1979. Future editions will probably be in electronic form. (21-4 ch 10)
1990	The National Topographic Data Base now has complete digital coverage of Canada obtained by digitizing the 1:250,000 maps. Work continues to provide larger-scale coverage for the settled parts of Canada. (21-4 ch 3)	1995	Saskatchewan's Central Surveys and Mapping Agency (CSMA) of the Saskatchewan Property Management Corporation has received digital coverage of the province from the National Topographic Data Base (NTDB). To complement this, an outline rural cadastral map has been produced at 1:20,000 and over 1700 township sheets are available. For cities, towns and smaller settlements, a 1:2000 series has been produced covering over 750 populated places. Both the 1:20,000 and 1:2000 series are uncontoured and show a minimum of detail but with the NTDB information they form an excellent base for GIS operations. (21-4 ch 4)
1990	NTS 1:50,000 coverage of Ontario is completed. (22, NTS index maps)		
1990	Manitoba's Surveys and Mapping Branch obtains three GPS receivers. (25)		
1990	The Federal Government adopts NAD83. (21-4 ch 2)		
1990	Geodetic Survey completes field control for the NTS 1:50,000 Series. (21-4 ch 2)		
1991	The Aerial Survey Data Base (ASDB) completed for all unmapped areas of Canada. The database includes the aerial photography and aerial triangulation of these unmapped areas which means that any sheet required can immediately be put into work. (21-4 ch 3)	1995	After a summer of testing, the Surveys Division of the Nova Scotia Dept. of Natural Resources acquires its first three GPS units.
		1995	In a departmental reorganization, effective August 16th, The Geological Survey of Canada and Geomatics Canada joined to become the Earth Sciences Sector of Natural Resources Canada
1991	Manitoba's Surveys and Mapping Branch obtain an Autocad drafting system for all survey plans. (25)		

Appendix

Surveying Education at Canadian Universities

- 1854 King's College, now the University of New Brunswick (UNB), offers an "extension course" in civil engineering and surveying. It ran from mid-February to the end of April with three evening courses per week and weekly "instruction in the field."
- 1857 The Arts Faculty at McGill University appoints the first professor of Civil Engineering and Road and Railroad Engineering.
- 1871 McGill starts Canada's first full-time university engineering program. Surveying was one of the major courses on the curriculum.
- 1876 The Royal Military College opens at Kingston. Courses are given in topographical surveying, engineering surveying and field sketching.
- 1878 The School of Practical Science (SPS) is opened at Toronto. In 1889 it becomes a faculty of the U of T. Surveying was from the first an important part of its program.
- 1889 UNB establishes a chair in civil engineering.
- 1892 U of T approves a Bachelor of Applied Science Degree.
- 1907 The Quebec government establishes a *Chaire d'arpentage* at Laval University.
- 1908 A School of Surveying is established as an affiliate of Laval University.
- 1915 By this year there were 10 universities in Canada offering degrees in civil engineering. These were, in order of appearance: U of T, UNB, Queen's, Manitoba, Nova Scotia Technical, Alberta, Saskatchewan and UBC. On an average these courses were three years in length, and included a course in astronomy and at least one survey camp.
- 1919 The Laval School of Surveying is merged with the School of Forest Sciences to form the School of Surveying and Forest Engineering.
- 1945-55 The time devoted to surveying at universities steadily declined during this decade. This decrease led to the 1959 Colloquium on Survey Education (see below).
- 1959 A Colloquium on Survey Education is held in Ottawa. It was pointed out that civil engineering was not serving the needs of surveying,

and that separate courses should be established to teach modern methods of surveying and photogrammetry and their uses in industry, land surveying, etc. This colloquium was the moving force in the establishment of university courses specializing in surveying.

- 1960 UNB starts its Survey Engineering degree program.
- 1961 U of T starts action to initiate a Survey Option in the Dept. of Civil Engineering for students who want to specialize in surveying, photogrammetry or geodesy. It is first offered in the 1961-62 academic year. (28 p.274)
- 1970 The Survey Option, established in 1955 at the U of T, is closed out with the last class graduating in 1970.
- 1972 A Survey Science program is established at the Erindale Campus of the U of T. This was done with the support of the Association of Ontario Land Surveyors.
- 1979 The University of Calgary (U of C) establishes its surveying engineering program within the Division of Civil Engineering.
- 1986 The Laval University program in Surveying and Forestry Engineering is renamed Geomatics and Forestry Engineering.
- 1988 The Centre for Surveying Sciences is established at the Erindale Campus of the U of T.
- 1994 The UNB surveying program is renamed Geodesy and Geomatics Engineering.

Survey Education at Community Colleges

1945-96 Surveying has been taught at Canadian community colleges since the opening of the Haileybury School of Mines in 1914. Since then most of these colleges have included surveying as part of their construction or mining courses. However, since 1945 specialized courses for technicians and technologists in surveying, photogrammetry, cartography, remote sensing, and Geographic Information Systems have been opened in a number of community colleges across Canada. These are listed in reference 45 pages 38 to 41, which is available from the Canadian Institute of Geomatics, free on request.

Acronyms and Abbreviations

APPU	Air Photo Production Unit	M&R	Mines and Resources
APSAMP	Atlantic Provinces Surveys and Mapping Plan	M&TS	Mines and Technical Surveys
ARDA	Agricultural Rehabilitation and Development Administration	MCE	Mapping and Charting Establishment
ASE	Army Survey Establishment	MCR	Map Compilation and Reproduction Division
CGIS	Canada Geographic Information System	NACCSM	National Advisory Committee on Control Surveys and Mapping
CHS	Canadian Hydrographic Service	NAPL	National Air Photo Library
CIS	Canadian Institute of Surveying	NRCan	Natural Resources Canada
CISP	Canadian Institute of Surveying and Photogrammetry	NTS	National Topographic System
CIG	Canadian Institute of Geomatics	PGE	Pacific Great Eastern (Railway)
DLS	Dominion Land Surveyor	PLS	Provincial Land Surveyor
DND	Department of National Defence	S&MB	Surveys and Mapping Branch
GIS	Geographic Information Systems	Topo Svy	Topographical Survey of Canada
GSC	Geological Survey of Canada	UBC	University of British Columbia
GSGS	Geographical Section of the General Staff	UNB	University of New Brunswick
Interior	Department of the Interior	U of C	University of Calgary
ISS	Inertial Survey System	U of T	University of Toronto
LRIS	In Maritimes, Land Registration and Information Service. In Alberta, Land Related Information Service		

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GIAC: Geomatics Industry Association of Canada 1987

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36. *The LRIS Story: A Legacy for the Maritimes*, by James Doig and Barbara Patton, Council of Maritime Premiers, Halifax.
37. *Survey Systems Within the Crown Domain: Colonies to Confederation*, British Columbia, W.A. Taylor, Dept of Lands, Forests and Water Resources, BC, 1975.
38. *Early Land Surveyors of British Columbia*, John Whitaker, Ed, 1990, Corporation of Land Surveyors of British Columbia.
39. *Fire Insurance Plans in the National Map Collection*, by Robert Hay wood, 1977, Public Archives of Canada.
40. *Sectional Maps of the Canadian West*, by Lorraine Dubreuil, 1989, Association of Canadian Map Libraries and Archives.
41. *The Photogrammetric Record*, Vol XIV, No 83, April 1994.
42. *Transactions*, Canadian Institute of Mining and Metallurgy, Vol XLVII.
43. Annual Reports of the New Brunswick Dept of Lands and Mines.
44. County Maps, by Heather Maddick, 1976, National Archives of Canada.
45. *Taking the Measure of Canada, Careers in Surveying and Mapping*, by L.M. Sebert, Canadian Institute of Geomatics.

Further information on many of the entries may be found in the appropriate annual reports and bulletins for the year concerned.

At present Volume 4 of *Men and Meridians* has not been published. A manuscript copy is available at the Geomatics Sector, Natural Resources Canada, for use by researchers.

Additions to the listings in *Significant Dates in Canadian Surveying, Mapping and Charting*

Once a year additions to the listing of Significant Dates will be published in *Geomatica*. This will serve to keep the listing up-to-date and also rectify the omission of dates that should have been included when the booklet was published.

- 1782 Allan McDonell makes the first property survey in Upper Quebec (now Ontario) under the British Administration. This apparently consisted of 70 lots in what would become Niagara Township. His account for 24 days work, including the expense of two chain bearers and one marker (i.e. picket man) came to £32 2s 6d. (4 5-8 p.6 and 28 p.59)
- 1873 The Department of the Interior was created on July 1st 1873 by Act of Parliament. The first annual report was for 1874. (36 Victoria c.4 1873)
- 1882 Four Provisional Districts were created, viz. Assiniboia, Saskatchewan, Alberta and Athabaska. Their boundaries are described in Interior Annual Report for 1882, p.XV Order in Council 8 May.
- 1883 The offices of Surveyor-General and Deputy Head, which had been combined in the person of Lindsay Russell, were separated. The Surveys Branch is now called the Technical Branch and Mr Russell retains supervision as Surveyor-General. Dr E. Deville becomes Chief Inspector of Surveys. (Order in Council March 13, 1883 and 19 p.36) [delete previous 1883 entry re Surveys Branch]
- 1889 Lindsay Russell having retired from the post of Surveyor-General, Edouard Deville is promoted to succeed him. (Interior Annual Report for 1889)
- 1890 John Johnston, chief draughtsman, is appointed "Geographer of the Department of the Interior". (Order-in-Council 1764, 5 July, 1890) [Replace 1890 entry which has wrong year]
- 1890 The Geological Survey is made a separate department under the Minister of the Interior. (53 Victoria c.11 May 1890)
- 1891 A complete account of surveys made between 1869 and 1889 written by W.F. King and J.S.Dennis appears in the Interior Annual Report for 1891.
- 1893 The International Boundary Commission begins work under Topographical Surveys Branch. (Interior Annual Report for 1893)
- 1899 John Johnston died on 12 June. Mr James White was transferred from Geographer of Geological Survey to be Geographer of Interior to take effect from 1 July, 1899. (Order-in-Council 24 June 1898 p.c. 1628 and Annual Report 1899)
- 1902 James White's first report gives names of his staff and gives a list of maps published. (Interior Annual Report for 1902, p.138)
- 1903 Astronomical Branch established. Previously the Chief Astronomer had been attached to the Topographical Surveys Branch. The new Branch includes the International Boundary Commission and Geodetic Surveys. (Order-in-Council P.C. 1250 and 1250L, 11 Oct. 1902 and Interior Annual Report for 1903)
- 1909 Mr White resigns from position of Chief Geographer. In 1910 R.E.Young is appointed to the position. (Order-in-Council P.C. 2027, 1 Oct. 1909 and P.C. 18-751, 19 Apr. 1910)
- 1909 Chief Geographer's Branch established. (Order-in-Council P.C. 1-232, 1 Feb. 1909)
- 1909 The Geodetic Survey Branch is officially established within the Department of the Interior although geodetic work in the form of astrofixes had been going on in the Department since 1902 and triangulation since 1905. Dr W.F. King is the first director.(P.C. 766, 20 Apr. 1909) [Delete previous entry for 1909 concerning Geodetic Survey]
- 1917 The Railway and Swamp Lands Branch is changed to Natural Resources Intelligence Branch to better describe its altered function. (Interior Annual Report for 1917)
- 1918 The Astrophysical Observatory at Victoria began work in May. (Interior Annual Report for 1919)
- 1922 The Topographical Survey, Geodetic Survey and International Boundary Commission are amalgamated into the Bureau of Surveys, with Dr Deville as Director General of Surveys. (Order-in-Council P.C. 27-2000, Sep.25,1922)
- 1922 The National Resources Intelligence Branch, Dept of Interior, takes over responsibility for the production and revision of the Chief Geographer's Series of maps at 1:250 000 and 1:500 000 scales. (Interior Annual Report)
- 1926 The Chief Geographer's Branch is incorporated with the Natural Resources Intelligence Service. (Interior Departmental Organization Chart for 1926)
- 1929 The National Development Bureau takes over responsibility for Chief Geographer's Series from National Resources Intelligence Branch. The 1:250 000 and 1:500 000 maps are also known as the Standard Topographical Maps of Canada although they are not topographic maps by the normal definition. (Interior Annual Report)
- 1950 The Photogrammetric Section is established at NRC in the Department of Physics under Dr T.J. Blachut. (21-4 ch 12)
- 1979 Division of Surveying Engineering established at U of Calgary. The Division became the Department of Survey Engineering in 1986. In 1992 the Department name was changed to Geomatics Engineering. The degree name was changed from BSc in Surveying to BSc in Geomatics in 1996.Q