Energy, Mines and Resources Canada
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CANOMA

Vol. 18 No. 1 July/juillet 1992

Canada

Canadian Permanent Committee on Geographical Names
Comité permanent canadien des noms géographiques

COVER/COUVERTURE :

Hauling a York Boat over the Robinson Portage. Engraved from a photograph by Robert Bell, taken in 1878 during his reconnaissance of the region between Lake Winnipeg and Hudson Bay.

Halant un «York Boat» de l'autre côté du «Robinson Portage». Gravure tirée d'une photographie de Robert Bell, prise en 1878 pendant son exploration de la région située entre le lac Winnipeg et la baie d'Hudson.

(Source: Geological Survey of Canada / Commission géologique du Canada, GSC 202412)

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Catalogue No. M85-12/18-1

Nº de catalogue M85-12/18-1

ISSN 0319-5228

ISSN 0319-5228

CANOMA

Vol. 18 No. 1 **July/juillet 1992**

News and views concerning Canadian toponymy compiled by the Secretariat of the Canadian Permanent Committee on Geographical Names

Nouvelles et commentaires concernant la toponymie du Canada recueillis par le Secrétariat du Comité permanent canadien des noms géographiques

In celebration of the 150th anniversary of the Geological Survey of Canada

Pour célébrer le 150e anniversaire de la Commission géologique du Canada

1842 - 1992

Published by / Publié par:

CANADA CENTRE FOR MAPPING
Surveys, Mapping and
Remote Sensing Sector

CENTRE CANADIEN DE CARTOGRAPHIE
Secteur des levés, de la
cartographie et de la télédétection

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THE LINGUISTIC TREATMENT OF GEONYMS

Normand Lemieux* and Benoît Couture**

[Translation]

These guiding principles are the fruit of our deliberations and do not necessarily reflect the editorial policy of the Geological Survey of Canada.

Since January 1988, the Department of the Secretary of State and the Geological Survey of Canada have collaborated on the translation of a large, prestigious work in nine volumes, entitled *Geology of Canada/Géologie du Canada.* The publication in French of such a wealth of information from a discipline which, in Canada and elsewhere in the world, is practised primarily in the language of Shakespeare, is an enormous undertaking.

Of the many terminological problems involved in this task, the treatment of names of geological units (which we will refer to from now on as "geonyms" to save space) is not the least. The profusion of geonyms is one reason for this. Another is the fact that, unlike names of geographical features (or toponyms), which in principle have only one official form duly entered in the gazetteers, geonyms sometimes vary in usage from author to author (particularly in capitalization), apparently with no form taking precedence. Thirdly, as we will see later, it is extremely difficult to apply strictly uniform rules to the translation of geonyms.

Like toponyms, geonyms generally consist of a generic term and a specific term. The generic term indicates the nature of the geological feature: batholith, fault, basin, anticlinorium, and so on; in names of formal stratigraphic units, this may be a rank term (group, formation, member, bed, and so on) or a descriptive term (limestone, sandstone, granite, and so forth). The specific term is most often a proper

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LE TRAITEMENT LINGUISTIQUE DES GÉONYMES

Normand Lemieux* et Benoît Couture**

Ces principes directeurs sont le fruit de notre réflexion et ne reflètent pas nécessairement la politique éditoriale de la Commission géologique du Canada.

Depuis janvier 1988, le Secrétariat d'État et la Commission géologique du Canada collaborent à la traduction d'un gros et prestigieux ouvrage en neuf volumes, *Geology of Canada / Géologie du Canada.* Mettre en français une publication d'une telle richesse d'information, issue d'une science qui, au Canada et ailleurs dans le monde, se pratique surtout dans la langue de Shakespeare, représente une tâche immense.

Parmi les nombreuses difficultés terminologiques que comporte cette entreprise, le traitement des noms des entités géologiques (que nous appelons ci-après «géonymes», pour des raisons d'économie d'espace) n'est pas la moindre. D'abord, à cause de la profusion de géonymes. Deuxièmement, parce que, contrairement aux noms des entités géographiques (ou toponymes), qui n'ont en principe qu'une seule forme officielle dûment consignée dans des répertoires toponymiques, les géonymes présentement parfois d'un auteur à l'autre des variations (notamment dans l'emploi de la majuscule) dont aucune ne semble prévaloir. Troisièmement, comme nous le verrons plus loin, il est extrêmement malaisé de soumettre la traduction des géonymes à des règles rigoureusement uniformes.

Comme le toponyme, le géonyme est généralement constitué d'un générique et d'un spécifique. Le générique indique la nature de l'entité géologique : batholite, faille, bassin, anticlinorium, etc.; dans les noms des unités stratigraphiques formelles, ce peut être un terme de rang (groupe, formation, membre, couche, etc.) ou un terme

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** Benoît Couture, ingénieur géologue et réviseur scientifique à la Commission géologique du Canada.

place name serving to situate the geological feature relative to a geographical feature: it can also be a patronym, a common name, or a qualifier. As for geographical names, no one can question the need to translate the generic term of a geonym, as it is full of information that must be made available to Francophone readers who know no English. Faced with this situation, the translator has three problems to solve:

1. Should generic terms be capitalized in French?
2. Should specific terms be translated?
3. How should generic terms be linked to specific terms? By direct apposition? By some connecting particle?

We will explain the procedure we followed for the French adaptation of English geonyms in translating *Geology of Canada.*

FORMAL AND INFORMAL STRATIGRAPHIC UNITS

For the translation of formal and informal stratigraphic units (in the broad sense of the term), we followed the rules in the *North American Stratigraphic Code.*[1] While that document was designed primarily for "classifying the naming stratigraphic and related units", the rules it contains are such that they can guide the translation of geonyms; for example, Article 7(e) reads in its entirely as follows:

> *(e)* ***Names in different countries and different languages.*** *For geologic units that cross local and international boundaries, a single name for each is preferable to several. Spelling of a geographic name commonly conforms to the usage of the country and linguistic group involved. Although geographic names are not translated (Cuchillo is not translated to Knife), lithologic or rank terms are (Edwards Limestone, Caliza Edwards; Formación La Casita, La Casita Formation).*[2]

1. Capitalizing the generic term

The generic term is written with an initial capital in the following cases:

descriptif (calcaire, grès, granite, etc.). Le spécifique est le plus souvent un nom propre de lieu, qui sert à situer l'entité géologique par rapport à une entité géographique; ce peut être aussi un patronyme, un nom commun ou un qualificatif. Comme dans le cas des noms géographiques, personne ne mettra en doute la nécessité de traduire le générique d'un géonyme, car il est chargé d'une information qu'il faut mettre à la portée d'un lecteur francophone qui n'aurait aucune espèce de connaissance de l'anglais. Cela posé, il reste au traducteur trois problèmes à résoudre :

1. Doit-on mettre la majuscule au générique en français?
2. Doit-on traduire le spécifique?
3. Comment doit-on relier le générique au spécifique? Par apposition directe? Par quelque particule de liaison?

Nous nous proposons ici d'exposer la démarche que nous avons suivie pour l'adaptation française des géonymes anglais dans le cadre de la traduction de *Géologie du Canada.*

À PROPOS DES UNITÉS STRATIGRAPHIQUES FORMELLES ET INFORMELLES

Pour la traduction des noms des unités stratigraphiques (largo sensu) formelles et informelles, nous avons suivi les règles énoncées dans le *Code stratigraphique nord-américain.*[1] S'il a d'abord été conçu pour *«la classification et l'appellation des unités reliées à la stratigraphie»*, ce document n'en contient pas moins des règles qui sont de nature à orienter la traduction des géonymes, par exemple en son article 7(e) que nous nous permettrons de citer en entier :

> *«(e)* ***La nomenclature selon les pays et les langues.*** *Il est préférable de désigner sous un même nom, plutôt que sous des noms différents, les unités stratigraphiques qui chevauchent les frontières régionales ou internationales. L'orthographe des termes géographiques se conforme généralement à l'usage et à la langue en vigueur dans le pays concerné. Les noms de lieux géographiques ne sont pas traduits (on ne traduirait pas Cuchillo par Couteau) mais les termes de rang et les termes lithologiques le sont (Edwards Limestone = Calcaire d'Edwards; Formacion La Casita =* Formation *de La Casita.»*[2]

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1 North American Commission on Stratigraphic Nomenclature (1983): "North American Stratigraphic Code", *The American Association of Petroleum Geologists Bulletin*, Vol. 67(5), American Association of Petroleum Geologists, pp. 841-875.

2 North American Commission on Stratigraphic Nomenclature (1983), p. 853.

1 North American Commission on Stratigraphic Nomenclature (1986): *Code stratigraphique nord-américain*, ministère de l'Énergie et des Ressources, gouvernement du Québec.

2 North American Commission on Stratigraphic Nomenclature (1986), p. 17.

a) Names of formal stratigraphic units

In this we comply with the *North American Stratigraphic Code*. *"Formally named units are those that are named in accordance with an established scheme of classification; the fact of formality is conveyed by capitalization of the initial letter of the* ***rank*** *or* ***unit*** *term (for example, Morrison Formation)"* (our emphasis).[3] It is understood that, to determine whether there is formality or not, the translator or revisor must rely on the author.

Examples: Shale de Burgess (Burgess Shale)
Calcaire de Brewster (Brewster Limestone)

The same document adds that *"Informal geologic units are designated by ordinary nouns, adjectives or geographic terms and lithic or unit-terms that are not capitalized (chalky formation or beds, St. Francis coal)."*[4] We also follow Ajout II of the *Code*, which adapts the rules of the North American code to French usage, in particular by stipulating where the lower case is obligatory in names of formal units.[5]

b) Names of features which no longer exist

A review of the geological literature leads us to conclude that usage favours capitalization of the generic term of geonyms designating features that no longer exist.

Examples: le Lac glaciaire Agassiz (glacial Lake Agassiz)
l'Inlandsis laurentidien (Laurentian Ice Sheet)
l'Océan Iapetus (Iapetus Ocean)
la Mer de Téthys (Tethys Sea)
la Mer d'Hudson (Hudson Sea)

c) Names of physiographic provinces and major geological features

We agree with Louis David that, in generic terms, *"the*

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3 North American Commission on Stratigraphic Nomenclature (1983), p. 850.

4 North American Commission on Stratigraphic Nomenclature (1983), p. 851.

5 North American Commission on Stratigraphic Nomenclature (1986): *Code stratigraphique nord-américain*, Ajout II, ministère de l'Énergie et des Ressources, gouvernement du Québec, p. 55. This quotation has been translated.

1. Emploi de la majuscule au générique

Le générique s'écrit avec une majuscule initiale dans les cas suivants:

a) Noms des unités stratigraphiques formelles

Nous nous conformons en cela au *Code stratigraphique nord-américain*. *«Les unités* ***formelles*** *sont nommées en accord avec un plan établi de classification; la formalité est indiquée en écrivant le terme de* ***rang*** *ou d'****unité*** *avec une majuscule initiale (exemple : la Formation de Morrison)»* (notre soulignement).[3] Il est entendu que, pour déterminer s'il y a formalité ou non, le traducteur ou le réviseur doit s'en remettre à l'auteur.

Exemples : Shale de Burgess
Calcaire de Brewster

Le même document ajoute que *«les unités stratigraphiques informelles sont désignées par des noms communs, des adjectifs ou des termes géographiques accompagnant des termes lithiques ou des termes d'unités écrits avec une minuscule initiale (formation crayeuse ou lits crayeux; charbon St. Francis).»*[4] Nous tenons compte également de l'Ajout II du *Code*, qui adapte les règles du code nord-américain à l'usage français, notamment en précisant les cas où la minuscule est de rigueur dans les noms des unités *formelles.»*[5]

b) Noms des entités disparues

Un examen de la littérature géologique nous amène à conclure que l'usage privilégie l'emploie d'une majuscule initiale dans le générique des géonymes désignant des entités disparues.

Exemples : le Lac glaciaire Agassiz
l'Inlandsis laurentidien
l'Océan Iapetus
la Mer de Téthys
la Mer d'Hudson

c) Noms des provinces physiographiques et des entités géologiques majeures

Nous convenons avec Louis David que, dans les

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3 North American Commission on Stratigraphic Nomenclature (1986), p. 8.

4 North American Commission on Stratigraphic Nomenclature (1986), p. 9.

5 North American Commission on Stratigraphic Nomenclature (1986), Ajout II, p. 55.

use of a capital is justified only in designating an important geographic or geologic feature having the sense of a proper name" (our emphasis).[6]

However, we admit there is an arbitrariness to the concept of "importance" when applied to geological features, and that the criteria used to define it may vary from author to author. For the purposes of our work, we decided, purely as an internal convention, that "important" terms warranting capitalization would include the names of geological provinces and large physiographic features. As the map of geological provinces and physiographic units is regularly redrawn, we emphasize the need to establish a list of these "important" names and to keep it updated.

la Province de l'Ours (Bear Province)
la Plate-forme de l'Intérieur (Interior Platform)
la Plate-forme du Saint-Laurent (St. Lawrence Platform)
la Plate-forme d'Hudson (Hudson Platform)
la Plate-forme de l'Arctique (Arctic Platform)
la Province du Supérieur (Superior Province)
la Province de Churchill (Churchill Province)
la Province de Nain (Nain Province)
la Province de Grenville (Grenville Province)
la Province des Esclaves (Slave Province)
la Province du Sud (Southern Province)

d) Geonyms with a single qualifier as the specific term

Where a geonym has only a single qualifier as its specific term, we suggest capitalizing the generic term, in accordance with established usage in international Francophone toponymy. Clearly, the use of a capital in **Escarpement dévonien** has quite a different effect on the reader from **escarpement dévonien**, since it highlights the geonym and, to repeat the words of L. David, gives it the "sense of a proper name".

Further examples: Plaines intérieures (Interior Plains)
Bouclier canadien (Canadian Shield)
Cordillère canadienne (Canadian Cordillera)
Complexe plutonique côtier (Coast Plutonic Complex)

On the other hand, in names of structural and tectonic features, the generic term is written in lower case. Following

[6] David, Louis (1984): *Géoécriture ou l'art d'écrire la géologie*, Manuels et méthodes, n° 10, Bureau de recherches géologiques et minières, p. 64. This quotation has been translated.

génériques, «*l'emploi d'une majuscule initiale n'est justifié que pour désigner une entité géographique ou géologique importante, ayant le sens d'un nom propre*» (notre soulignement).[6]

Cela dit, nous admettons le caractère arbitraire de la notion d'«importance» employée à propos des entités géologiques, et que les critères utilisés pour la définir peuvent varier d'un auteur à l'autre. Pour les besoins de notre travail, nous avons décidé, par pure convention interne, d'admettre pour «importants» et justifiables de l'emploi de la majuscule les noms des provinces géologiques et des grandes entités physiographiques. La carte des provinces géologiques et des unités physiographiques étant redécoupée régulièrement, nous insistons sur la nécessité de dresser la liste de ces noms «importants» et de la mettre à jour.

la Province de l'Ours
la Plate-forme de l'Intérieur
la Plate-forme du Saint-Laurent
la Plate-forme d'Hudson
la Plate-forme de l'Arctique
la Province du Supérieur
la Province de Churchill
la Province de Nain
la Province de Grenville
la Province des Esclaves
la Province du Sud

d) Géonymes ayant pour spécifique un simple qualificatif

Lorsqu'un géonyme n'a pour spécifique qu'un simple qualificatif, nous proposons d'écrire le générique avec une majuscule initiale, conformément à l'usage attesté dans la toponymie francophone internationale. Il est évident que l'emploi de la majuscule dans **Escarpement dévonien** produit un tout autre effet sur le lecteur que **escarpement dévonien**, puisqu'il met en relief le géonyme et, pour reprendre les mots de L. David, lui confère le «sens d'un nom propre».

Autres exemples : Plaines intérieures
Bouclier canadien
Cordillère canadienne
Complexe plutonique côtier

En revanche, dans les noms des entités structurales et tectoniques, le générique s'écrit avec une minuscule initiale. Voici les génériques anglais les plus usuels, avec leurs équivalents français :

[6] David, Louis (1984): *Géoécriture ou l'art d'écrire la géologie*, Manuels et méthodes, n° 10, Bureau de recherches géologiques et minières, p. 64.

are the most common English generic terms, with their French equivalents:

anticline	:	anticlinal
anticlinorium	:	anticlinorium
arc	:	arc
arch	:	arche
basin	:	bassin
block	:	bloc
depression	:	dépression
detachment	:	décollement
embayment	:	rentrant
fault	:	faille
fold zone	:	zone de plissement
fracture zone	:	zone de fracture
gianticline	:	géanticlinal
graben	:	graben
high	:	relief, hauteur
homocline	:	homoclinal
orocline	:	oroclinal
platform	:	plate-forme
ridge	:	dorsale, crête
salient	:	promontoire
shear zone	:	zone de cisaillement
shelf	:	plate-forme
structural culmination	:	culmination structurale
syncline	:	synclinal
synclinorium	:	synclinorium
thrust sheet	:	nappe de charriage
trench	:	sillon, fossé
trough	:	cuvette
uplift	:	soulèvement

2. Treatment of the specific term

a) Where the specific term is a place name

Should we translate geographical terms which are part of the specific term of a geonym? Should the geonym **Hudson River Fault**, for example, be rendered by **faille de Hudson River** or rather by **faille de la rivière Hudson?** This is probably the thorniest question we have had to face in the linguistic treatment of geonyms. For a satisfactory answer, it seemed essential to us to ask another question first: Does the non-translation of the geographical term deprive the Francophone reader of a significant element of information?

We finally answered this question in the negative. In fact, we came to the conclusion that not only did the translation of the geographical term of a geonym not contribute anything to understanding the text, it could theoretically be a source of confusion if, for example, it produced two homonymic forms in the target language (if, say, there was a **faille de la rivière Hudson** or a **faille de Rivière-Hudson** which was not the **Hudson River Fault**. We find another dissuasive argument in Ajout II of the *North American Stratigraphic Code: "... it*

anticline	:	anticlinal
anticlinorium	:	anticlinorium
arc	:	arc
arch	:	arche
basin	:	bassin
block	:	bloc
depression	:	dépression
detachment	:	décollement
embayment	:	rentrant
fault	:	faille
fold zone	:	zone de plissement
fracture zone	:	zone de fracture
gianticline	:	géanticlinal
graben	:	graben
high	:	relief, hauteur
homocline	:	homoclinal
orocline	:	oroclinal
platform	:	plate-forme
ridge	:	dorsale, crête
salient	:	promontoire
shear zone	:	zone de cisaillement
shelf	:	plate-forme
structural culmination	:	culmination structurale
syncline	:	synclinal
synclinorium	:	synclinorium
thrust sheet	:	nappe de charriage
trench	:	sillon, fossé
trough	:	cuvette
uplift	:	soulèvement

2. Traitement du spécifique

a) Quand le spécifique est un nom de lieu

Doit-on traduire les termes géographiques qui font partie du spécifique d'un géonyme? Le géonyme **Hudson River Fault**, par exemple, doit-il se rendre par **faille de Hudson River** ou plutôt par **faille de la rivière Hudson**? Telle est probablement la question la plus épineuse qui se soit posée à nous en matière de traitement linguistique des géonymes. Pour répondre convenablement à cette question, il nous est apparu essentiel de poser d'abord celle-ci : Est-ce que la non-traduction du terme géographique prive le lecteur francophone d'un élément d'information significatif?

À cette question nous avons finalement répondu par la négative. En fait, nous sommes arrivés à la conclusion que non seulement la traduction du terme géographique d'un géonyme n'apporte rien à la compréhension du texte, mais encore qu'elle pourrait théoriquement être une source de confusion dans l'hypothèse, par exemple, où elle produirait deux formes homonymiques dans la langue d'arrivée (par exemple, s'il existait une **faille de la rivière Hudson** ou **faille de Rivière-Hudson** qui ne fût pas la **Hudson River Fault**. Nous trouvons un autre argument dissuasif dans l'Ajout II du

should be noted that geographical names that are part of the formal names of stratigraphic units in Quebec must be taken from the Répertoire toponymique du Québec or be approved by the Commission de toponymie du Québec if not found there. It should also be noted that these names have the same written forms in French and English and that their official forms are as they appear in the Répertoire."[7] If we apply this rule to the translation of English geonyms, we will conform to the official forms of geographical names, as found in the provincial and federal gazetteers.

Consequently, prudence and rigour dictate that we abstain from translating the geographical terms in geonyms. While the term **River** in the toponym **Hudson River** is a generic term and can therefore be translated in careful writing according to the rules followed by the federal government[8] in the geonym **Hudson River Fault** it loses its generic quality to the term **Fault** and becomes an element of the specific term.

Another point argues in favour of not translating geographical terms which act as specific terms in geonyms. It is found in Article 7(a) of the *North American Stratigraphic Code*, which reads: *"The generic part of a geographic name, e.g., river, lake, village, should be omitted from new terms, unless required to distinguish between two otherwise identical names."*[9]

In light of all these considerations, we have adopted the following procedure:

In names of formal stratigraphic units, the geographical term acting as a specific term is not translated, in accordance with the *North American Stratigraphic Code*.

Examples:

Queen Charlotte Group : Groupe de Queen Charlotte
Rocky Mountains Group : Groupe de Rocky Mountains

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7 North American Commission on Stratigraphic Nomenclature (1986), Ajout II, p. 55. This quotation has been translated.

8 See Treasury Board (1983): "Official Languages and Geographical Names on Federal Government Maps", Treasury Board Circular No. 1983-58.

9 North American Commission on Stratigraphic Nomenclature (1983), p. 852.

Code stratigraphique nord-américain : «... rappelons que les noms géographiques entrant dans l'appellation formelle des unités stratigraphiques au Québec doivent être empruntés au Répertoire toponymique du Québec ou être approuvés par la Commission de toponymie du Québec, s'ils n'y figurent pas. Rappelons également que ces noms ont la même graphie en français et en anglais et que leur forme officielle est celle apparaissant au Répertoire.»[7] Si nous transposons cette règle dans le domaine de la traduction des géonymes de langue anglaise, nous nous en tiendrons aux formes officielles des noms géographiques, telles qu'elles apparaissent dans les répertoires toponymiques provinciaux et fédéraux.

En conséquence, la prudence et la rigueur nous commandent de nous abstenir de traduire le terme géographique dans un géonyme. Si, dans le toponyme **Hudson River**, le terme **River** tient lieu de générique et peut donc être traduit dans les textes suivis selon les règles en usage dans l'administration fédérale,[8] dans le géonyme **Hudson River Fault** il perd sa qualité de générique au profit du terme **Fault** et devient un élément du spécifique.

Un autre argument plaide en faveur de la non-traduction des termes géographiques qui tiennent lieu de spécifiques dans les géonymes. Il s'agit de l'article 7(a) du *Code stratigraphique nord-américain*, selon lequel : *«la partie générique d'un terme géographique (lac, rivière, village) ne devrait pas être incluse dans les nouveaux noms d'unités, à moins qu'elle ne soit nécessaire pour distinguer entre deux noms qui, autrement, seraient identiques.»*[9]

Au vu de toutes ces considérations, nous avons adopté la ligne de conduite suivante :

Dans les noms des unités stratigraphiques formelles, le terme géographique tenant lieu de spécifique n'est pas traduit, conformément au *Code stratigraphique nord-américain*.

Exemples :

Queen Charlotte Group : Groupe de Queen Charlotte
Rocky Mountains Group : Groupe de Rocky Mountains

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7 North American Commission on Stratigraphic Nomenclature (1986), Ajout II, p. 55.

8 Voir Conseil du Trésor (1983) : "Les langues officielles et les toponymes - Application à la cartographie fédérale", circulaire nº 1983-58 du Conseil du Trésor.

9 North American Commission on Stratigraphic Nomenclature (1986), p. 16.

In all other geonyms, the geographical term acting as a specific term is not translated, unless it is a name of pan-Canadian significance, in which case the recognized equivalent is used in French.

Examples:

Queen Charlotte Basin	:	bassin de Reine Charlotte
Columbia River Fault	:	faille du Columbia
Rocky Mountain Trench	:	sillon des Rocheuses
Great Slave Lake Shear Zone	:	zone de cisaillement du Grand lac des Esclaves
Great Bear Magnetic Zone	:	zone magnétique du Grand lac de l'Ours

b) Where the specific term is a common noun or a qualifier

In our view, common nouns and qualifiers acting as specific terms must be translated, as they contain information which is unavailable to Francophone readers unfamiliar with the English language.

Examples:

Rusty Shale formation	:	formation de Shale rouille
Gypsum formation	:	formation de Gypse
Upper Carbonate formation	:	formation de Carbonate supérieur

3. Apposition of the generic term to the specific term

For formal and informal stratigraphic units, we conform to the *North American Stratigraphic Code*, particularly the rules stated in Ajout II, which covers practically all situations. We refer the reader to the text of that document. We will simply mention here that, when the specific term is a geographical name, *"the particle linking the rank term (or descriptive term) with the geographic name shall be the preposition* ***DE*** *contracted to* ***DES*** *before the article* ***les.***"[10]

For other geonyms, we insert the preposition **de** or one of its derivatives **des, du, de la** and **d'** when the specific term is a toponym or a patronym, unless usage has established a form without any connecting particle.

CONCLUSION

These guiding principles were proposed for purposes of translating a publication of the Geological Survey of Canada

[10] North American Commission on Stratigraphic Nomenclature (1986), Ajout II, p. 55. This quotation has been translated.

Dans tous les autres géonymes, le terme géographique tenant lieu de spécifique n'est pas traduit, à moins qu'il ne s'agisse d'un nom d'intérêt pancanadien, auquel cas on emploie en français l'équivalent reconnu.

Exemples :

Queen Charlotte Basin	:	bassin de Reine Charlotte
Columbia River Fault	:	faille du Columbia
Rocky Mountain Trench	:	sillon des Rocheuses
Great Slave Lake Shear Zone	:	zone de cisaillement du Grand lac des Esclaves
Great Bear Magnetic Zone	:	zone magnétique du Grand lac de l'Ours

b) Quand le spécifique est un nom commun ou un qualificatif

Nous considérons que les noms communs et qualificatifs tenant lieu de spécifiques doivent être traduits, car ils contiennent une information inaccessible à un lecteur francophone qui ne connaît pas la langue anglaise.

Exemples :

Rusty Shale formation	:	formation de Shale rouille
Gypsum formation	:	formation de Gypse
Upper Carbonate formation	:	formation de Carbonate supérieur

3. Apposition du générique au spécifique

Dans le cas des unités stratigraphiques formelles et informelles, nous nous conformons au *Code stratigraphique nord-américain*, et en particulier aux règles énoncées dans l'Ajout II, qui couvrent pratiquement toutes les situations. Nous renvoyons le lecteur au texte de ce document. Il suffira ici de mentionner que, lorsque le spécifique est un nom géographique, *«la particule faisant le lien entre le terme de rang (ou le terme descriptif) et le nom géographique est la préposition* ***DE*** *contractée en* ***DES*** *devant l'article* ***les.***»[10]

Dans le cas des autres géonymes, nous intercalons la préposition **de** ou ses dérivés **des, du, de la** et **d'** lorsque le spécifique est un toponyme ou un patronyme, à moins que l'usage n'ait consacré une forme sans particule de liaison.

CONCLUSION

Rappelons que ces principes directeurs ont été proposés aux fins de la traduction d'une publication de la Commission

[10] North American Commission on Stratigraphic Nomenclature (1986), Ajout II, p. 55.

which, we believe, should help establish geological terminology and nomenclature for the next few years, at least in the federal government. We feel we have consulted the best sources available and coordinated our approach with the guidelines of the CPCGN, Treasury Board, and Department of the Secretary of State concerning the linguistic treatment of geographical names.

Rules of this kind, useful as they are, are never more than a stopgap measure which can in no way substitute for a bilingual index of names of geological features and their equivalents in the other official language; in this regard, it should be pointed out that the Secretary of State terminology services are aware of this need, and that the various volumes of *Geology of Canada* will undoubtedly undergo a systematic terminological analysis.

Nevertheless, we feel that any substantive effort to standardize "geonymy" should involve the establishment of a committee similar to the Advisory Committee on Names for Undersea and Maritime Features of the CPCGN, whose mandate would be to recognize and index geological names in both official languages. Of all organizations, the Canadian Permanent Committee on Geographical Names seems to us the best placed and the most competent to guide such a project. At least, this is our hope.

géologique du Canada qui, croyons-nous, devrait contribuer à fixer la terminologie et la nomenclature géologiques, dans l'administration fédérale à tout le moins, pour les prochaines années. Nous pensons avoir consulté les meilleures sources disponibles et harmonisé notre démarche avec les lignes directrices du CPCNG, du Conseil du Trésor et du Secrétariat d'État concernant le traitement linguistique des noms géographiques.

Des règles de ce genre, pour utiles qu'elles soient, ne sont jamais que des palliatifs qui ne sauraient en aucun cas remplacer un répertoire bilingue des noms des entités géologiques et de leurs équivalents dans l'autre langue officielle; précisons à cet égard que les services terminologiques du Secrétariat d'État sont sensibilisés à ce besoin, et que les différents volumes de la *Géologie du Canada* feront sans doute l'objet d'un dépouillement terminologique systématique.

Cela dit, nous estimons qu'un véritable effort d'uniformisation de la «géonymie» devrait passer par la mise sur pied d'un comité semblable au Comité consultatif des noms d'entités sous-marines et marines du CPCNG, qui aurait pour fonctions de sanctionner et de répertorier les noms géologiques dans les deux langues officielles. Parmi tous les organismes en place, le Comité permanent canadien des noms géographiques nous semble le mieux placé et le plus compétent pour piloter un tel projet. C'est du moins le souhait que nous formulons.

THE GSC AND YELLOWKNIFE GEOGRAPHICAL NAMES

Susan Jackson*

The year 1935 turned out to be a very important year in the history of the Geological Survey of Canada (GSC) and subsequently in the opening up of the Yellowknife mining region. This history is reflected in many of the names assigned to the geographical features of that region.

To set the scene: there was no community called Yellowknife then. The Yellowknife River area, on the north shore of Great Slave Lake in the Precambrian Shield, was sparsely inhabited by Dene who trapped and hunted the region. A few mineral claims had previously been staked in the area. And as far as the map went there were many blank areas labelled *"Unmapped country many lakes"*.

Canada was mid-Depression and from 1930 to 1934 the federal government had reduced the Geological Survey's funds time and again. Unexpectedly, in the spring of 1935, things changed. The Federal Minister of Mines, The Hon. Wesley A. Gordon, announced that one million dollars would be allowed for special projects to be undertaken by the Survey. This saw increased funds for the use of aircraft by the Survey. Up to that time most of the field work was done by canoe. In the Northwest Territories only one special project was carried out and that project was headed by Alfred W.

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'Fred' Jolliffe. He had just completed his graduate studies in geology, was 28 years old, and had worked summers for the GSC from 1928 to 1934.

By mid-June of 1935, fifteen men in a GSC field party were crossing Great Slave Lake on board a twin-motor diesel boat – the MS *Pelly Lake*. Fourteen of the crew were summer university students – half claimed some previous field experience. Years later Dr. Jolliffe wrote an article about that summer.

> *"We were a pretty green lot... Our instructions, laid down in Ottawa, were brief but formidable. A 10,000 square-mile area north of Great Slave Lake was to be mapped geologically with rock belts favorable for mineral deposits (particularly gold) delineated ... we had to survey canoe routes and topography as well."*

One of the 1935 field party, a young university student, James D. 'Jimmy' Mason, described the work that summer.

> *"The early years on the Geological Survey were pretty tough by today's standards. Only a few of the major lakes were (already) mapped. The oblique photographs which were available in 1935 were inaccurate due to the distortion and could be out a matter of miles in the background area. For example Gordon Lake on the photos looked about 10 miles long when in reality it was over 30.*
>
> *We had a 10 ft. by 12 ft. canvas tent, no floor or flybar. No mosquito dope. We used a mixture of black pine tar and citronella. Slept on the ground or on pine boughs if available. Cooked over a campfire. Pretty basic rations, beans, rice, flour, raisins, canned slab bacon and big slab of canned ham. These usually spoiled after a few days. Coffee, sugar, tea, salt, dried apples. Ate a great deal of fish. No guns so couldn't get game.*
>
> *Used 18-ft. Peterborough pointed work canoes with much higher sides than sport canoes of today. We paddled. There were a couple of out board engines but these and gas were just something else to carry on the portage so were not used. We must have spent 40-50% of our time portaging. Sometimes we would portage right by a lake that was in an adjacent valley. One of our problems was that we were serviced once a month by plane and we had to be on a lake that showed on the existing maps so the pilot could find us. Many times if held up by storms we would work 20 hours per day to be at the service point on time.*
>
> *Survey instruments consisted of Brunton compasses and boat logs, a torpedo-shaped device that rotated behind the canoe and distance was registered on a dial in the canoe. Distances on land traverses were measured by pacing 1000 double paces per mile. Had to break count for hills or steep valleys. We got surprisingly accurate at this.*
>
> *Wages were $55 per month and we were the lucky ones that got the summer's work and experience."*

The Survey's work under Jolliffe was directly responsible for many important discoveries in the Yellowknife area and for the gold rush which followed. The Yellowknife gold field was an economic bright spot which drew world attention. Mines opened up – mines called Con, Negus, Rycon, Giant, Ptarmigan, Crestaurum, Yellorex, Akaitcho. The mining settlement – Yellowknife – started as a boom town and today is a modern city.

Dr. Jolliffe paid tribute to those men of the 1935 field parties and their names are now appropriately attached to lakes in the areas they slugged through and mapped that summer. To Dr. Jolliffe's personal satisfaction many of his

Four members of the GSC survey party, summer of 1935: Fraser Buckham (standing, left), party chief Lyman Skinner (standing, right), Howard Blatchford (sitting, left), and Neil Campbell (kneeling, right)

(Source: James D. Mason, Yellowknife History Project #159.019)

novices from that and subsequent summer projects went on to shape illustrious careers.

LAKE/RIVER	LOCATION
MEMBER OF GSC 1935 FIELD PARTIES	

Mason Lake **62 23 - 114 07**

Jimmy D. Mason worked on Jack Gordon's sub-party in the central region that summer, and for mining companies in 1938-40 and 1945-49. He found the Crestaurum property near Yellowknife and also Mercury Gold Mines property in Indian Lake area.

Campbell Lake **62 19 - 112 56**

Neil Campbell worked on the sub-party in the Beaulieu-François River area and continued for three more seasons with GSC. In 1937 he started work as a district geologist for C.M. & S. Co. Ltd. and while at Con Mine in 1944, he discovered a valuable gold deposit which was named the Campbell Shear Zone. He was named to the Canadian Mining Hall of Fame in 1992.

Jennejohn Lake **62 25 - 113 44**

Norman Jennejohn had worked the summer of 1932 with Jolliffe on Dr. D.F. Kidd's geological survey of Great Bear Lake. He was a sub-party chief on the 1935 survey, mapping the western part of the area. Norman went on to become a dentist.

Tibbitt Lake **62 32 - 113 21**

Jack F. Tibbitt, after spending the summer of 1935 on Jennejohn's sub-party, stayed and found other work in the Yellowknife area until 1948.

Reid Lake **62 28 - 113 23**

Norm Reid was on Jennejohn's sub-party working in the western part of the area.

Blatchford Lake **62 11 - 112 35**

Howard Blatchford worked on Lyman Skinner's sub-party covering the Beaulieu-François River area. Wing Commander Howard "Cowboy" Blatchford, D.F.C., of Edmonton, was an RAF ace lost during the Battle of Britain.

Sparrow Lake **62 37 - 113 38**

Jack Sparrow worked on Jack Gordon's sub-party surveying in the central region.

Aerial view of Jolliffe Island (bottom left) in the early 1970s. By this time the fuel tanks had been moved across Yellowknife Bay past Con Mine and almost all the houses had been moved from the island. The old and new town of Yellowknife can be seen in the centre of the photograph

(Source: Gerhard Reimann, Yellowknife History Project #115.042)

Graham Lake **62 54 - 113 48**

Ted Graham was a member of Jack Gordon's sub-party.

Love Lake **63 00 - 114 46**

Bill Love worked on Jennejohn's sub-party. Bill drowned in a canoeing accident in 1939 while on another GSC trip.

Buckham Lake **62 18 - 112 38**

A. Fraser Buckham was on Lyman Skinner's sub-party covering the Beaulieu-François River area.

Skinner Lake **62 21 - 113 22**

Jolliffe submitted Skinner Lake after Lyman Skinner whose sub-party covered the Beaulieu-François River

area. The lake has been named **Harding Lake**, after pilot Dave Harding.

Ross River **62 38 - 113 12**

John Ross, along with Keith Falkner, stayed back at main camp on Yellowknife Bay with Jolliffe. The base camp was moved half-way through the summer to Russell Lake, north of Fort Rae.

Dr. Jolliffe was a permanent member of the Geological Survey until 1946 when he joined Queen's University. During that time he submitted and suggested many, many other names to the Geographic Board of Canada for features in the Yellowknife area.

He submitted the Dene names (translated into English) of the lakes right around Yellowknife Bay area – names like **Alexie Lake**, **Baptiste Lake**, **Bear Lake**, **Bluefish Lake**, **Bighill Lake**, **Creek Lake**, **Duckfish Lake**, **Madeline Lake**, **Martin Lake**, **River Lake**, *Sand Lake* (now **Frame Lake**), **Narcisse Lake**, **Rib Lake**, **Vital Lake**, and **Willow Lake**. One name he suggested was from Dene history - **Akaitcho Bay** after Chief Akaitcho, who travelled with the explorer Sir John Franklin in 1819 and 1820.

He also suggested names that reflected individuals and exploration activities in the area. For example, when the GSC crews arrived in the area that spring of 1935, Major L.T. 'Lockie' Burwash, a mining engineer who had a gold show on the east side of Yellowknife Bay, had a crew sinking a prospect shaft there. This resulted in Burwash Mine and Jolliffe named **Burwash Point** after him. It is thought that **Gordon Lake** was named by Jolliffe after the Minister of Mines, The Hon. Wesley A. Gordon, who had made the million-dollar-budget announcement that spring. Incidentally, his son, Jack Gordon, was the sub-party chief on that summer field party with Jolliffe.

He submitted names that were used in geological field notes or ones that were descriptive, like **Handle Lake** and **Long Lake**. There was a convenience and sensibility in using the names already assigned to lakes by prospectors on their claim maps. For example, the name **Quyta Lake** was named by C.J. 'Yellowknife Johnney' Baker and Herb Dixon in 1933 on their claim map. The name is a variation of the spelling of the exclamation "Man, there is quite a lake!" That name endured, appeared in the 1935 GSC field notes, and was later made official by the Geographic Board of Canada.

Jolliffe submitted names of prospectors. **Mosher Island** was named after the prospector Murdoch Mosher who staked the property opposite the island on the west side of Yellowknife Bay. He suggested **Pud Lake** after Floyd 'Pud' McAusland, and **Baker Creek** after C.J. 'Yellowknife Johnney' Baker, who staked claims in the vicinity that were later developed into Giant Mines.

After working for the GSC, Dr. Jolliffe went on to a distinguished career at McGill and Queen's Universities. He died in 1988, aged 81, in Kingston, Ontario.

One last geographical name, and one not to be overlooked – an island, which is now part of the City of Yellowknife. In 1938 Dr. Jolliffe suggested the island be named *Racine Island*, after Pete Racine, one of the men who set up the first tent-hotel on a nearby island. Pete Racine, by the way, was also a bootlegger. This one time the Geographic Board of Canada did not use Dr. Jolliffe's suggestion – instead deciding on the name **Jolliffe Island**. The Geological Survey cache had been situated on this island in the 1930s. And the island was also used as the tank farm for Imperial Oil and as a residential district. Today, Jolliffe Island, owned by the City of Yellowknife, has only one log house and a few shacks remaining. The City, through administrative decisions, has allowed nature to take back the island and has zoned Jolliffe Island as a park and recreation area. The island could not have been better named. It seems appropriate that a record of the remarkable work and influence of Jolliffe and the Geological Survey of Canada has been noted in these many geographical names.

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ROBERT BELL: *THE FATHER OF PLACE NAMES?*

Gillian Burles* **and Randolph Freeman****

Ten years after Confederation, the northern geographical limits of Canada were poorly defined. The Arctic islands had been claimed by Great Britain, but this claim remained tenuous due to her inability, and perhaps unwillingness, to enforce British law or establish settlements on the islands. Since it was always assumed that the transfer to Canada would eventually take place, and there was little in the way of 'foreign' activity on the islands, neither Government was in a hurry to process the required paperwork.

A relatively minor occurrence appears to have forced Great Britain and Canada to begin negotiations leading to the official transfer in 1880. In 1874, Lieutenant Wm.A. Mentzer of the U.S. Corps of Engineers requested, from the British Government, a grant of twenty square miles of land on Cumberland Sound, for the purpose of mining and exploration. Even though the grant was denied, Lieutenant Mentzer led an expedition to Cumberland Sound and mined mica, graphite, and other minerals. Great Britain only learned of this activity in the area through American newspaper reports. This was perceived as a threat to British sovereignty in the Arctic.

Canada began to enforce its claim to the northern islands in 1884 with a series of Arctic expeditions to gather "*... any information, hydrographical, geological, or with reference to the fisheries of the region ... [and] to demonstrate as far as possible the navigation of the [Hudson] Straits for the purpose of commerce.*"[1] An additional function of these expeditions was to enforce Canadian law, tax foreign whaling ships, and occupy parts of the islands. An unwritten, and perhaps unwitting, purpose of these expeditions was to lay claim by giving names to geographical features. Traditionally, names have been used by Europeans as powerful symbols of territorial possession.

An important member of these early Canadian Government expeditions was Robert Bell, M.D., LL.D., F.G.S., Acting Director of the Geological Survey of Canada. Bell, the son of a Presbyterian minister, was born in Ontario in 1841. He received much of his education at McGill College and from 1863 to 1869 was Professor of Chemistry and Natural Science at Queen's University. He began his lifelong association with the Geological Survey of Canada (GSC) in 1857 when only fifteen years of age, and *"his name is interwoven with the geological survey of the country from Gaspe to the Mackenzie River, and from Lake Erie to Hudson's Bay and Strait."*[2]

Bell is known for his strong beliefs concerning the role of the GSC in cartography and toponymy. In a paper[3] presented to the Dominion Land Surveyors' Association in 1886, he argued that there should be uniformity in map scale, projection, and nomenclature. He noted the number of spelling variations of the same name that appeared on different maps and urged that a "central map bureau" be created to solve these problems.

During the Canadian Government's Arctic expeditions of 1884 and 1885, Bell served as both geologist and medical officer. His extensive education and scientific knowledge inspired him to gather zoological specimens and make observations on latitude, longitude, and bearing in order to produce accurate maps. He also displayed a keen interest in Canada's aboriginal peoples' culture and history.

Bell's third trip to the Arctic was in 1897. The Department of Marine and Fisheries sent the Newfoundland steamship *Diana* into Hudson Strait to continue earlier work to determine the navigable season of the Strait. The Geological Survey took the opportunity to send Dr. Bell on this expedition, as his 1884 and 1885 work in this area had been limited by time constraints to cursory observations. During this expedition he *"... studied the geology and natural history including the animal and plant life of an important section of the south coast [of Baffin Island] and incidentally secured valuable geographic knowledge making a survey and a map of*

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* Gillian Burles, Toponymic Researcher, Geographic Names Program, Government of the Northwest Territories.

** Randolph Freeman, Territorial Toponymist, Geographic Names Program, Government of the Northwest Territories.

1 Canada, Department of Marine and Fisheries (1886): *Annual Report of the Department of Marine and Fisheries.* n.p.

2 Tuttle, Charles R. (1885): *Our North Land: being a full account of the Canadian North-West and Hudson's Bay Route ...* , C. Blackett Robinson, Toronto, p. 183.

3 See reference to this paper in Don W. Thomson (1972 reprint): *Men and Meridians: 1867 to 1917*, Vol. 2, Information Canada, Ottawa, p. 116.

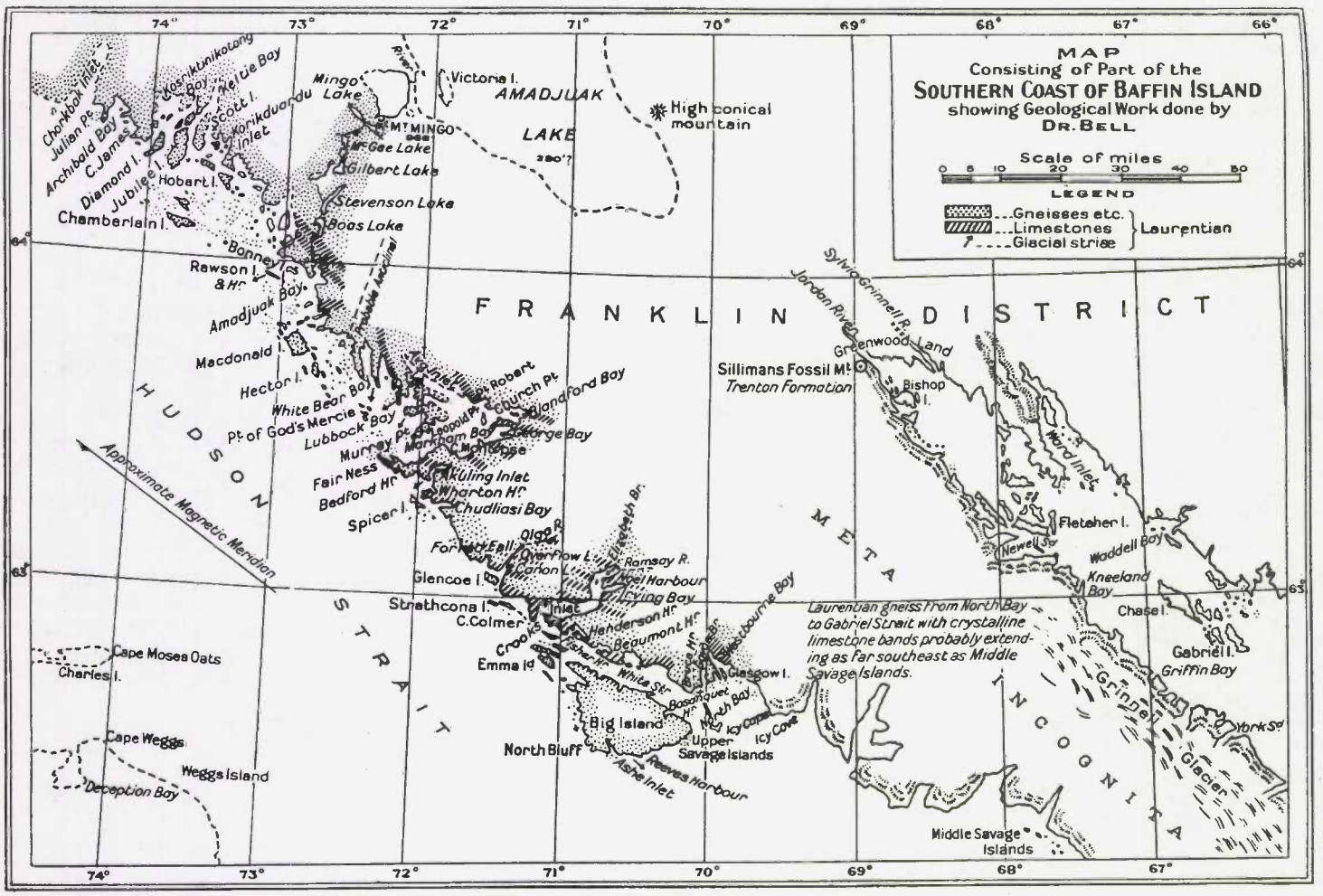
the area covered."[4] Bell's map (see Map 1) provided details on the relative positions of geographical features to be found on the south coast of Baffin Island and is the original source of many of the toponyms found in this part of the Canadian Arctic.

On June 3, 1897, Dr. Bell left Halifax on board the *Diana*, arriving at Ashe Inlet, Big Island, on July 20. He immediately began his survey, assisted by an Inuk named Twimi. They travelled by yacht, northwest from Big Island, making observations along the way, slowly building upon the geographical knowledge of the south coast of Baffin Island.

The south coast of Baffin Island had previously been visited by Dr. Franz Boas, a German ethnologist. Boas conducted ethnographic research among the Baffin Island Inuit from his base of operations at the Kekerten whaling station on Cumberland Sound. One of his trips from this whaling station led him into the interior of southern Baffin Island passing by *Amakdjuak*, a feature now officially known as **Amadjuak Lake**. He travelled a route local Inuit used to access the large herds of caribou that inhabited the region. Part of this route provided relatively easy access from the southern coast of Baffin Island at Amadjuak Bay along a series of small lakes to Amadjuak Lake. Boas produced maps[5] for his reports that gave detailed information on

[4] Canada, Department of the Interior (1930): *Southern Baffin Island: An Account of Exploration, Investigation, and Settlement During the Past Fifty Years*, (collated and edited by A.E. Millward), F.A. Acland, Ottawa, p. 275.

[5] See, for example, his 1885 map *Baffin Land zur Darstellung der Verbreitung der Eskimostamme* as reprinted in *Southern Baffin Island* .... , p. 32.



Map 1. From *Southern Baffin Island: An Account of Exploration, Investigation, and Settlement During the Past Fifty Years*, page 33

traditional Inuit names for areas around Cumberland Sound *(Tiniqdjuarbing)* and Frobisher Bay *(Tiniqdjuarbiusirn)* but showed little detail of the south coast or the southern interior of Baffin Island. The only feature to which he referred by name was *Amakdjuak* (Amadjuak Lake). Boas lays claim to the honour of being the first *Qallunaaq* (non-Inuit) to visit this lake. Curiously, Bell also claimed to be the first *Qallunaaq* to explore this area.

In his 1901 paper to the Royal Geographical Society, Bell admitted his indebtedness to Dr. Franz Boas' 1885 map of southern Baffin Island. Boas' map depicted a route into the interior of Baffin Island. Bell showed an interest in this route as a means to explore the interior of Baffin Island. Even though the map lacked sufficient detail for Bell to find and follow the route, his Inuit guide, Twimi, claimed to be familiar with this traditional trail. Twimi's experience was limited to kayaking the numerous small lakes of the route while Bell, lacking a canoe, travelled by foot. It appears that Bell blamed Twimi for the considerable difficulty encountered on this inland journey. Bell wrote: *"In our weary walk along the stony margins of the chain of lakes which we followed, varied by détours over the high rocky hills in order to reach Lake Amadjuak, I could not help wishing for a canoe, by which the journey would have been accomplished with greater ease and in less time."*[6]

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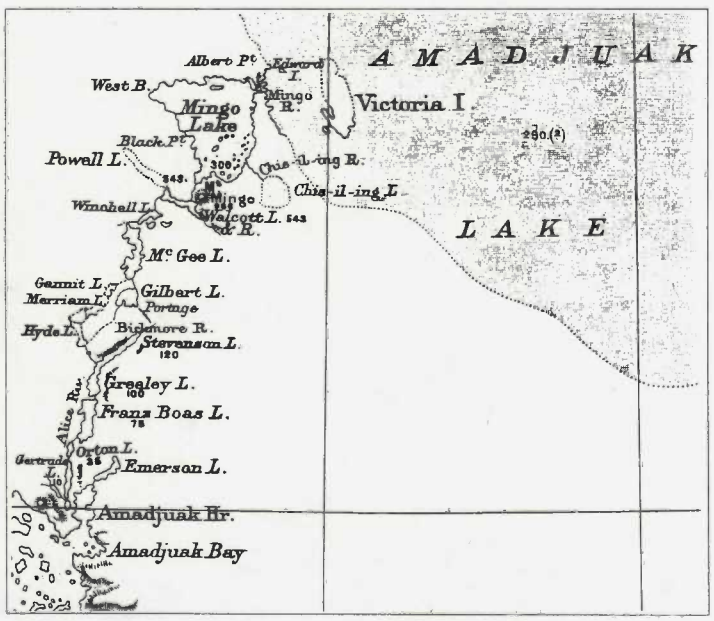
6 Bell, Robert (July 1901): "A Survey in Baffinland, with a Short Description of the Country", *The Geographical Journal*, Royal Geographical Society, p. 28.



Map 2. Portion of a map accompanying Bell's "A Survey in Baffinland, with a Short Description of the Country"

Given the importance of this route to the indigenous population, traditional names would be expected on many of the features along the trail. Inuit toponyms, likely of long-standing usage, were in fact recorded for these features during later explorations.[7] Bell used 'Anglicized' Inuktitut names for features along the coast; it is therefore striking that his map (see Map 2) lacks any traditional Inuit names, with the exception of M*ingo* and *Chis-il-ing*, for the numerous lakes that make up the route.

Why did Bell not record these names? It would be easy to dismiss this question simply by saying Inuit names did not exist for these features or, if they existed, Bell had no knowledge of them. However, it is our opinion that this situation is a reflection of a 'prejudice' that existed, and may still exist, concerning Canada's reluctance to recognize and use native toponyms. D. Leechman, in his 1954 paper on Robert Bell, stated:

> *"In his many years of field work, Bell gave names to over three thousand topographical features - more than any other explorer in Canada - and most of them, nearly all in fact, are still in use. Other officers of the survey used to call Bell 'the father of all place names'. It takes a man with a full mind to think of three thousand different and appropriate place-names. He preferred to retain the original Indian name if possible, but many of these were long and difficult of pronunciation."*[8]

While Bell may have taken an interest in native culture, he was still an agent of the Government of Canada and thus compelled to follow official government policy. The guidelines of the Geographic Board of Canada regarding name length and difficulty of pronunciation meant that few native names could receive official recognition. Given this situation it is likely that Bell simply ignored Inuit toponyms that he considered 'too long' or 'unpronounceable'. Even though Bell was a remarkable man and in many ways ahead of his time, he was still a product of an era where native people played only a minor role in forming our cultural mosaic. Bell was actively involved in the Government's goal to 'Canadianize' the Arctic in order to solidify its claim. Giving 'Canadian' names to many of the geographical features he 'discovered' was one of Bell's contributions to Canadian sovereignty in the Arctic.

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7 See, for example, Soper, J. Dewey (1981): *Canadian Arctic Recollections: Baffin Island 1923-1931*, Institute for Northern Studies, Saskatoon.

8 Leechman, D. (Autumn 1954): "The Father of Place Names", *Beaver*, p. 26.

CONTRIBUTIONS BY THE GEOLOGICAL SURVEY OF CANADA TO GEOGRAPHICAL NAMES IN NORTH-CENTRAL BRITISH COLUMBIA

H. Gabrielse*

The naming of drainage, topographical, and geological features in the Cassiar and Omineca mountains of northern British Columbia has followed a consistent pattern from the travels of the early explorers to the present. Streams used as exploration routes appeared on maps dating from the beginning of the nineteenth century. Their names reflect the influence of the voyageurs (for example, *Rivière aux Liards*) and explorers, such as Dease and Finlay. In the latter part of the century an influx of gold placer miners resulted in the naming of most gold bearing creeks, for example, McDame, Thibert, Defot, Manson, Germansen, and Vital) and, to a lesser extent, nearby conspicuous mountains. The great impetus for geographical names came, however, when topographical maps on a scale of 1:250 000, were systematically produced in the late 1940s. The Topographical Survey, until then a part of the Geological Survey of Canada, incorporated names from previous maps produced by provincial and other agencies onto its maps. These names included many local terms, in particular those of native Indian origin. Thus, in the Cassiar Mountains, there is a rich heritage of Tahltan and Kaska terminology, and, in the Omineca Mountains, of Sekani terminology. The resultant names are phonetic translations and reflect not only on the listening capabilities of the translators, but, in some cases, on the sense of humour of the contributor.

The Geological Survey of Canada has provided many geographical and geological names in the course of its exploration and systematic regional mapping projects. The first geologist to travel through the Cassiar region was G.M. Dawson on his epic Yukon Expedition survey in 1887. He named the **Hotailuh Range**, south-southwest of Dease Lake, using Tahltan terminology for *much hot water*, probably referring to the warm springs along the north part of the range. He also named *McLeod Mountain* (now **Mount McLeod**) on the west side of Dease Lake after the fur trader, J.M. McLeod of the Hudson's Bay Company, who reached the lake via Dease River in 1834. Other prominent mountains named by Dawson were **Mount Sullivan**, south of the mouth of Dease Creek, after J.H. Sullivan, the first Gold Commissioner of the district; **Anvil Mountain**; *Beady Mountain* (now **Beady Range**); and *Skree Mountains* (now **Skree Range**) along the upper reaches of Dease River. A distinctive peak south of McDame, **Sylvester Peak**, was named, presumably, in honour of the placer miner, trader, and storekeeper, Rufus Sylvester,[1] well known in the Cariboo, Omineca, and Cassiar districts. Dawson also suggested the name **Sheep Mountain** for a conspicuous peak about 15 km southeast of McDame. Finally, the mountainous terrain traversed by the northeasterly flowing Dease River was named the *Cassiar Range* (now **Cassiar Mountains**). The origin of the name is uncertain. One possibility is that it was taken from *Kasha*, the Kaska Indian name for McDame Creek. Another is that it represents an approximation of Kaska, the Indian tribe.

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1. Dawson named it after R. Sylvester, but this could refer to either Rufus or Robert Sylvester, both of whom were active in the area at that time.

View to east over Chukachida Lake in the Omineca Mountains

(Source: H. Gabrielse)

The name **Zus Mountain** was proposed in 1959 by the writer for the highest peak near the town of Cassiar. At about the same time, B.S. Norford of the Survey suggested several names, also derived from the Kaska dialect, for features in the lower Turnagain River area. These included **Deeh Ridge**,[2] west of Turnagain River.

The Sekani Indians have contributed words to many euphonious names in the Omineca Mountains and the northern Rocky Mountain Trench. Many have been assigned to geological units by officers of the Geological Survey: E.F. Roots in the 1950s, H. Gabrielse in e 1950s and 1970s, and C.E. Evenchick in the 1980s. These geological units include Omineca intrusions,[3] Ingenika Group, Tochieka Gneiss, and Kechika Group.[4] For the Sekani, these names and many others in the region (Mesilinka, Osilinka, Thudaka, Kwadacha) express a redundancy when combined with the word river because the 'ka' syllable at the end of each word means 'river'. Many of the names noted above were used by R.G. McConnell of the Survey on his map published in 1895. The name of his assistant, H.Y. Russel, was later used for a mountain range and peak in the northern Omineca Mountains.

In the early 1980s, the names **Samuel Black Range** and **Black Lake** were proposed by the writer for geographical features between Toodoggone River and Finlay River, in recognition of Samuel Black, who explored the Finlay River to its headwaters in 1824 and continued on to the Turnagain River. Not until the release of Black's journals by the Hudson's Bay Company in the 1960s was it realized that Black, and not Finlay, had led the journey, one of the most remarkable, in terms of physical hardship, in the history of Cordilleran exploration. **Thudaka Peak**, the highest peak (elevation 2 740 m/8 990 ft.) in the Thudaka Range, and in the Omineca Mountains also, was named by the writer.

Many important physiographic and drainage features in the north-central part of British Columbia remain to be officially named. The Geological Survey of Canada and other agencies will have continuing opportunities to enrich the nomenclature by using the names of early explorers and placer miners and of the words of the native Indians.

2 Zus is the Kaska word for snow, deeh for squirrel.

3 This generic would not be used today.

4 Omineca = lake-like river; ingenika = river with whortleberry along its banks; tochieka = fox.

GEORGE MERCER DAWSON AND THE QUEEN CHARLOTTE ISLANDS

Janet Mason*

"Beat out of Victoria harbour as the light fades from the hills, touching with a rosy tint the Summits of the Olympian mountains long after the last glow has gone from the hills about Victoria itself."[1] So begins George Mercer Dawson's account of his exploration of the east coast of the Queen Charlotte Islands in the summer of 1878. A poet? Certainly; also a noted geologist and, arguably, the eminent scientist of the Geological Survey of Canada.

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1 Cole, Douglas and Lockner, Bradley, editors (1989): *The Journals of George M. Dawson: British Columbia, 1875-1878.* Vol. II, 1877-1878, (May 27, 1878), University of British Columbia Press, Vancouver, p. 437.

While the world is likely more familiar with Dawson's photographs and descriptions of Haida culture, and his comparative vocabularies of the Haida language, or even his *Report on the Queen Charlotte Islands*, 1878 (describing the landscape and natural resources of the archipelago), he also left a legacy of place names, many of which are still labelled on maps today. Extending along the east side of Moresby Island, *Juan Perez Sound* was so named, Dawson wrote, *"in*

honour of the reputed discoverer of the Q.C. Islands, who - though he appears rather to have had that honour thrust upon him than earned it by courage in his exploration - probably deserves some recognition."[2] He also reinstated Perez' *Sierra de San Cristoval*, labelling the range that forms the spine of Moresby Island *San Cristoval Mountains* (now **San Christoval Range**) for the protector of travellers, St. Christopher. At the southern entrance of Juan Perez Sound, Dawson named **Huxley Island** in honour of marine biologist Thomas Henry Huxley, author of *Man's Place in Nature*, and his nearby **Monument Rock** and **All Alone Stone** are still recognized by vessels entering the sound. Continuing northwest of Huxley Island, Dawson named **Werner Bay**, **Hutton Inlet**, **De la Beche Inlet**, and **Bigsby Inlet** to honour 18th century German geologist Abraham Gottlob Werner, the founder of scientific geology; Scottish philosopher and geologist Dr. James Hutton, author of *Theory of the Earth*; Sir Henry Thomas De la Beche whose promotion of detailed geological mapping of Great Britain led to the establishment of the Geological Survey of Britain in 1835; and John Jeremiah Bigsby, medical doctor and amateur geologist who published numerous natural history papers, including *The Shoe and the Canoe*, a Canadian "travelogue" published in Britain in 1850.

Ramsay Island, **Murchison Island**, **Faraday Island**, and **Bischof Islands** at the north end of Juan Perez Sound were named by Dawson for then Director-General of the Geological Survey of Britain, Andrew Crombie Ramsay; Sir Roderick Impey Murchison, second Director of the Geological Survey of Britain; chemist and physicist Michael Faraday (for whom the electrical unit *farad* is named); and the German chemist and geologist Karl Gustav Bischof. North of Juan Perez Sound, **Lyell Island** is separated from Moresby Island by **Darwin Sound** - Dawson's commemorations of Sir Charles Lyell, author of *Principles of Geology*, 1830, and *The Antiquity of Man*, 1863, and Charles Robert Darwin, the greatest naturalist of the 19th century. At the north end of Darwin Sound, Dawson named **Richardson Inlet** for geologist James Richardson, who had actually visited the Queen Charlotte Islands, and **Logan Inlet** for Sir William Edmund Logan, the first Director of the Geological Survey of Canada.

North of Lyell Island, Dawson named **Dana Inlet** for American geologist and minerologist, James Dwight Dana, member of the Wilkes Expedition of 1841 and editor of the *American Journal of Science*; **Selwyn Inlet** for the second Director of the Geological Survey of Canada, Dr. Alfred R.C. Selwyn; **Kilmington Point** for Selwyn's birthplace; and **Louise Island** in honour of the 1878 royal visit to Canada by H.R.H. Princess Louise Caroline Alberta, fifth daugher of Queen Victoria.

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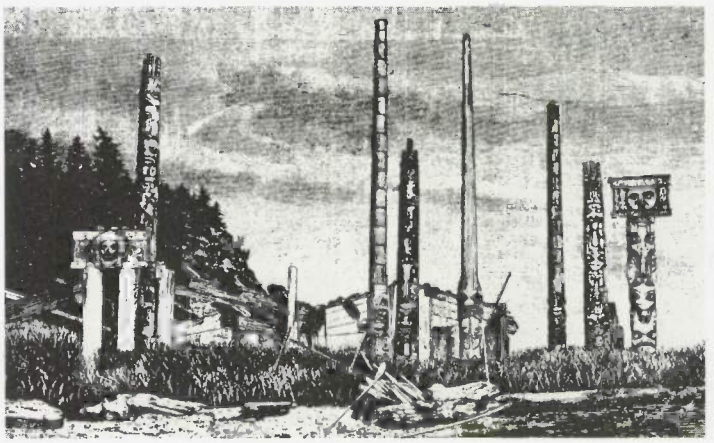
2 Dalzell, Kathleen E. (1973): *The Queen Charlotte Islands, Book 2: Of Places and Names*, Cove Press, Prince Rupert, p. 195.



Houses and carved posts, Skedans. Engraved from G.M. Dawson's photograph of July 1878, taken during his study of the Queen Charlotte Islands

(Source: Geological Survey of Canada, GSC 251)

Not all of Dawson's place names were honorific however; he applied numerous names that were descriptive of the appearance, morphology, or geographical location of the feature: **Tangle Cove**, **Bag Harbour**, **Pillar Rock**, **Hotspring Island**, **Crescent Inlet**, **Redtop Mountain**, **Rockfish Harbour**, **Slatechuck Creek**, **Boat Cove**, **Limestone Islands**, **South Bay**, **Conglomerate Point**, and **Copper Bay** still appear on maps. Other more banal labels that Dawson applied have since been renamed; his *South Arm*, *South Island*, *Entrance Island*, *Tree Island*, *West Arm*, *Village Island*, *North Arm*, and *Log Point*[3] have become **Carmichael Passage**, **Sandilands Island**, **Haswell Islet**, **Jewell Island**, **Gillatt Arm**, **Haans Islet**, **Trounce Inlet**, and **Downie Island**, respectively.

For over 100 years linguists and anthropologists have recognized Dawson's accuracy in rendering Haida place names. His spellings of **Klunkwoi Bay**, **Laskeek Bay**, **Maast Island**, **Tow Hill**, and **Hiellen River** and village sites **Chaatl**, *Kai-shun*,[4] *Ut-te-was*, *Ka-yang*, and *Yan* are only now being rewritten as orthographies are developed and standardized.

Anthropologist Charles F. Newcombe, travelling the Queen Charlottes in 1897, added another fitting trio of place names that are still used today - **Mercer Point**, **Dawson Harbour**, and **Dawson Inlet**.

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3 Dawson thought he was on a point. Later changed to Log Island and finally to Downie Island.

4 Now **Kaisun**.

GEOLOGICAL SURVEY OF CANADA

PEOPLE COMMEMORATED IN THE ROCKY MOUNTAINS AND ROCKY MOUNTAIN FOOTHILLS BETWEEN THE 49TH AND 53RD PARALLELS

G.B. Leech*

Twenty-five geographical features in the Rocky Mountains and Rocky Mountain Foothills[1] are named for former members of the Geological Survey of Canada (GSC). At least six more were named for seasonal field employees because of their association with the GSC. Not treated here are additional features named for people who had short associations with the GSC but are commemorated for their careers elsewhere. The GSC people named can be categorized as follows:

1. Honoured by their party leaders in the days before boards on geographical names imposed constraints on naming geographical features after living persons

   G.M. Dawson named a trio of mountains for three able assistants in his Rockies and Foothills work. All three, R.G. McConnell (1881-1882), J.B. Tyrrell (1883), and J. White (1884), proceeded to important careers in GSC. Packers[2] honoured by their party chiefs, but not referred to further here, were Dawson's Salter (**Salter Creek** in Alberta, **Salter Mountain** in B.C.),[3] McEvoy's S. Derr (**Derr Creek** in Alberta), and Tyrrell's T. Hastings (**Hastings Ridge** in Alberta).

2. Casualties in World War I and the field

   W.E. Lawson and O.E. LeRoy died overseas during World War I. C.W. Drysdale and G.S. Malloch lost their lives during field work. Remembered here, too, are two seasonal technical assistants, H.M. Peck, a war casualty, and W. Gray, who died with Drysdale.

3. Commemorated on ground they knew

   D.B. Dowling, W.W. Leach, and J. McEvoy worked where they are commemorated as did, peripherally, A.R.C. Selwyn. Malloch, McConnell, Tyrrell, and White have claims here, too.

4. Commemorated on other grounds

   Demarcation of the Interprovincial Boundary (between British Columbia and Alberta) involved naming numerous geographical features. The Geographic Board of Canada baulked when a boundary commissioner brought forward yet another list of names of Himalayan peaks and presidents of alpine clubs when a cluster of geographical features needed names. The board solicited proposals elsewhere: enter A.E. Barlow, D.D. Cairnes, L.M. Lambe, A.P. Low, and J.F. Whiteaves - eminent geologists, but with little or no association with the Rockies.

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The following notes on the GSC people whose names live in the Rockies and Foothills may add interest to views of "their" features, on the site or in the mind's eye.

Mount Barlow, Alta/BC — NTS 82 N/10
Barlow, Alfred E. (1861-1914) — GSC 1883-1907

Barlow was known internationally for his studies of the Canadian Precambrian Shield and mineral deposits related to igneous rocks, such as Sudbury nickel ores. He was the son of the GSC's original chief draughtsman, Robert, and brother of its second, Scott. Barlow lost his life when the

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1 Hereafter, Rockies and Foothills.

2 A packer was the person responsible for the management of pack horses.

3 Salter's initial is unknown. It does not appear in Dawson's notes, report, or private journal.

Empress *of Ireland* sank in the St. Lawrence River in May 1914. Mount Barlow overlooks Freshfield Icefield.

Mount Bogart, Alta NTS 82 J/14
See **Dowling Ford**

Mount Cairnes, BC NTS 82 N/10
Cairnes Glacier, BC NTS 82 N/10
Cairnes, Delorme D. (1879-1917) GSC 1905-1917

After work on potential coal measures in the Foothills, south of Bow River, in 1905, Cairnes became the GSC's Yukon specialist, in charge of work there and in northern British Columbia. Mount Cairnes and Cairnes Glacier are at the south end of Freshfield Icefield.

Dowling Ford, Alta NTS 83 C/10
Dowling, Donaldson Bogart (1858-1925) GSC 1885-1925

Dowling was a leading authority on geology and fuel resources through the Plains to the eastern Rockies and on the coal resources of Canada. His early duties were as a topographer on GSC exploratory geological surveys in western Canada, notably those of J.B. Tyrrell. He developed geological abilities that enabled him to undertake independent geological reconnaissances, as he did in northern Manitoba. In 1903, he began investigation of the known and potentially coal-bearing areas of the Foothills and Rockies, where he had first worked in 1886. His investigations, ranging from the Flathead River to the Athabasca River through ten years, were valuable both economically and geologically. Dowling was responsible for the first comprehensive estimate of Canadian coal resources, published in 1913. In succeeding years, he appraised geological potentials for oil and gas in the Plains and Foothills and for artesian water supplies in the Plains. The Canadian Mining Institute (he was its president in 1918-1919) installed a plaque at Banff in his honour. Mount Bogart overlooking Kananaskis Valley and Dowling Ford on the Brazeau River are in areas familiar to him.

Mount Drysdale, BC NTS 82 N/1
Drysdale, Charles W. (?-1917) GSC 1908-1917

Drysdale's excellent work, mostly on the geology of mining areas in British Columbia, was cut short in July 1917. Travelling across the Rockies by the Spray River - White Man Pass - Cross River route, he and assistant William Gray drowned in their attempt to cross the swollen Kootenay River. Mounts Drysdale and Gray guard Wolverine Pass, west of Vermilion River, a Kootenay tributary.

Mount Gray, BC NTS 82 N/1
See **Mount Drysdale**

Mount Lambe, Alta/BC NTS 82 N/10
Lambe Glacier, Alta NTS 82 N/10
Lambe, Lawrence M. (1863-1919) GSC 1885-1919

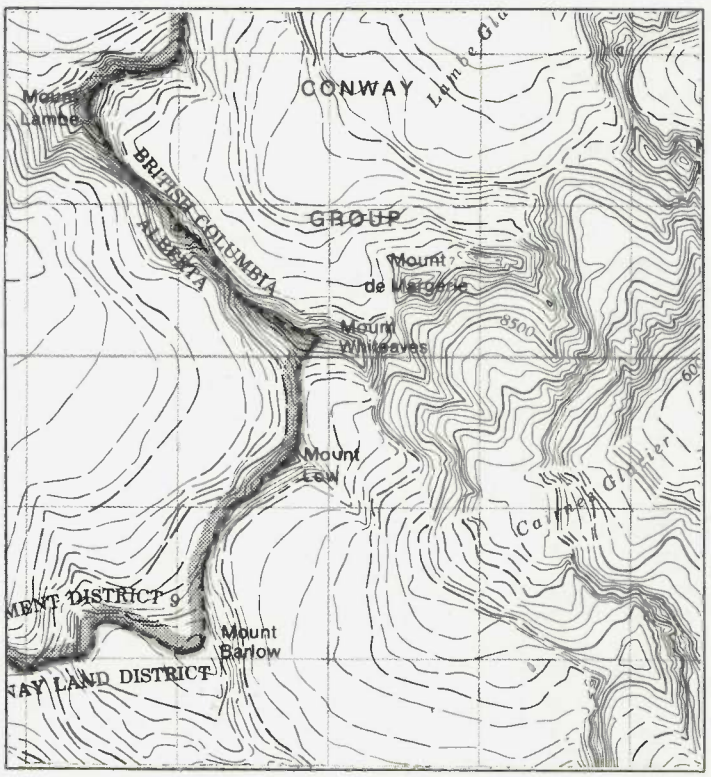
Lambe was a paleontologist, whose early duties as an artist to illustrate reports on fossils evolved into work in invertebrate paleontology and, finally, into specialization in vertebrate paleontology. He served as head of GSC's paleontology division, 1912-1919. Mount Lambe and Lambe Glacier are in the Freshfield Icefield area.

Mount Lawson, Alta NTS 82 J/14
Lawson, W.E. (?-1918) GSC 1909-1918

Lawson was a topographer who mapped in New Brunswick, British Columbia, Yukon and Quebec (James Bay). Major Lawson entered the army in 1916 and died of wounds in August 1918. Mount Lawson overlooks the Kananaskis Valley.

Leach Creek, BC NTS 82 G/10,7
Leach Ridge, BC NTS 82 G/7
Leach, William W. (1872-1913)GSC 1896-1903, 1906-1913

From 1896 to 1900, topographer-geologist Leach was responsible for the topographical mapping side of geological



Part of NTS map 82 N/10 showing Mount Barlow, Cairnes Glacier, Mount Lambe, Mount Low, and Mount Whiteaves

surveys in the West Kootenay district, B.C. In 1901, he took over the work that J. McEvoy (see McEvoy Creek) had commenced in the Fernie-Crowsnest area. After geological investigations in the Skeena-Bulkley River region, 1906-1910, he resumed work in the Crowsnest coal area. Leach Creek and Leach Ridge are approximately 15 km east of Fernie, B.C.

Mount LeRoy, BC NTS 82 J/11
LeRoy Creek, BC NTS 82 J/11
LeRoy, Osmond E. (1873-1917) GSC 1900-1903, 1906-1917

Geologist in charge of the GSC's British Columbia work and a specialist in mineral deposits, LeRoy was regarded as a potential director of GSC. He died of wounds at Passchendaele in October 1917. The mountain and creek named in his honour are at the head of Palliser River.

Mount Low, Alta/BC NTS 82 N/10
Low, Albert P. (1861-1942) GSC 1882-1901, 1902-07

One of the great geologist-explorers, Low's epic journeys through Ungava and Labrador included discovery of the Labrador iron deposits. He commanded the DGS Nep*tune* expedition of 1903-1904 to gain information about the Arctic islands and, specifically, to assert Canadian authority there. He was appointed director of the GSC in 1906 and deputy minister of the Department of Mines in 1907, but became incapacitated soon afterward. Mount Low overlooks the Freshfield Icefield.

Mount Malloch, Alta NTS 82 N/16
Malloch Creek, Alta NTS 82 N/16
Malloch, George S. (1879-1914) GSC 1906-1914

Malloch mapped the geology and topography of coal regions along the east edge of the Rockies, between Panther River and Clearwater River (1906-1907) and the North Saskatchewan and Brazeau Rivers (1908). Work in British Columbia (1909-1912) included examination of the Groundhog coalfield. In 1913, Malloch was appointed geologist of the Canadian Arctic Expedition's northern party. He reached Wrangel Island after the DGS *Karluk* was crushed by ice but died there in 1914. Mount Malloch, which looks into country he mapped, and Malloch Creek are on the north side of Clearwater River.

Mount McConnell, Alta NTS 82 N/9
McConnell Creek, Alta NTS 82 O/12, 82 N/9
McConnell Ridge, Alta NTS 82 O/3
McConnell, Richard G. (1857-1942) GSC 1879-1914

McConnell's career as an outstanding geological explorer, able administrator, and gentleman is perhaps the most distinguished of those sketched here. It began as assistant on G.M. Dawson's 1879 traverse from the Pacific to Fort Edmonton via Fort St. James, on which McConnell did independent work in the Peace River country. After a season on the Precambrian rocks of Quebec, McConnell returned to the West, where he worked each field season for 33 years, from the Cypress Hills to the Klondike. His work included primary exploration geology of large regions, more detailed studies of metalliferous areas in British Columbia and the Yukon, and a pioneer structural study of the Rockies.

McConnell was the first to recognize that the Rockies terminate at the Liard River. He did so in the course of a remarkable geological reconnaissance of northern British Columbia and the Mackenzie, Porcupine, and Yukon Rivers in a "field season" that lasted from May 1887 to September 1888.

McConnell made the first structural cross-section of the Rocky Mountains and was the first to recognize and interpret their great repetitions of strata thrust eastward over younger rocks. In 1949, a thrust fault he had recognized at the Rockies Front was named for him. McConnell was appointed deputy minister of the Department of Mines, of which the GSC was a part, in 1914. In 1921 he retired from this position but not from geology. For several years he was a consulting geologist and also did geological mapping for the Ontario government. He was an ardent outdoors man. McConnell did not seek honours, but only to do his work well.

Mount McConnell overlooks the Red Deer River into which McConnell Creek flows. *McConnell Ridge*,[4] the mountain front immediately south of Bow River, is underlain by the McConnell Fault.

McEvoy Creek, BC NTS 82 G/7
McEvoy, James (1862-1935) GSC 1885-1901

McEvoy joined the GSC as a topographer to assist geological mapping carried out by G.M. Dawson and others in British Columbia. He gradually undertook an increasing proportion of geological work and then independent geological reconnaissances. In 1898, he investigated the route from Edmonton to Tête Jaune Cache.[5] In 1900, he was one of those responsible for selecting coal-bearing lands to be held by the Dominion of Canada in the Fernie-Crowsnest Pass area. He resigned in 1901 to join the Crowsnest Pass Coal Company becoming its chief engineer in 1908. He later established a consulting practice in Toronto. McEvoy Creek is a headwater of Flathead River.

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4 Karamitsanis (1991), p. 158. *McConnell Ridge* does not, yet, appear in the Canadian Geographical Names Data Base.

5 McEvoy (1901).

Mount Peck, BC — NTS 82 J/3
Peck, Henry Martyn (?-1918)

H.M. Peck was a topographical field assistant in the seasons of 1914 (Turner Valley), 1915 (James Bay with W.E. Lawson; see Mount Lawson), and 1916 (Kananaskis - Elbow area). He was killed in World War I. Mount Peck is at the headwaters of the Bull River and East White River.

Selwyn Range, BC — NTS 83 D/14,10,15
Selwyn, Alfred R.C. (1824-1902) — GSC 1869-1895

Selwyn, the GSC's second director, initiated its programme of scientific exploration of the vast western and northern regions added to Canada by acquisition from the Hudson's Bay Company and by union with British Columbia. The GSC became responsible for appraisal of the economic potential of proposed routes for the promised railway to the Pacific. British Columbia's terms of union in 1871 stipulated, furthermore, that the Dominion was to conduct geological surveys there. In that same year Selwyn travelled the Fraser-Thompson-Yellowhead route. He rounded the north end of the range that McEvoy (see McEvoy Creek) would name for him,[6] turning back on 21 October at a point about 15 km west of the summit of Yellowhead Pass because of the lateness of the season.

Selwyn's successor was G.M. Dawson. A Dawson Creek drains a western spur of Selwyn Range but the origin of its name has not been discovered.

Mount Tyrrell, Alta — NTS 82 O/12
Tyrrell Creek, Alta — NTS 82 O/12
Tyrrell, Joseph B. (1858-1957) — GSC 1881-1899

Tyrrell's introduction to the Rockies was as G.M. Dawson's assistant in 1883. In 1884-1886, he made a reconnaissance of the region between 110° W and 115°15' W (western Saskatchewan to west of Rocky Mountain House) and the latitude of Calgary and the North Saskatchewan River, discovering coal and dinosaur fossils on the Red Deer River. (The Royal Tyrrell Museum of Palaeontology and Dinosaur Provincial Park are located in the vicinity). After work in Manitoba (1887-1891), he made major reconnaissance journeys through the region between Lake Athabasca and Hudson Bay (1892-1894). In 1898, he and R.G. McConnell (see McConnell entries) were assigned the study of Yukon gold areas but he soon resigned to establish a consulting practice in the Yukon and, later, in Toronto. Mount Tyrrell overlooks Red Deer River, into which Tyrrell Creek flows.

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6 McEvoy (1901), p. 14D.

Mount White, Alta — NTS 82 O/12
White, James (1863-1928) — GSC 1884-1899

White, who joined the GSC as a surveyor, was with G.M. Dawson in the Rockies in 1884. His later field work was in eastern Ontario and adjacent Quebec. He became GSC's chief draughtsman in 1894 but resigned in 1899 to become chief geographer in the Department of the Interior. White was secretary, then head of the Commission of Conservation (1909-1921), then technical advisor to the Minister of Justice (1921-1928). A long-time member of the Geographic Board of Canada, he was its chairman in 1927 and 1928. Mount White looks north across the Red Deer River to Mount Tyrrell.

Mount Whiteaves, Alta/BC — NTS 82 N/10
Whiteaves, Joseph F. (1835-1909) — GSC 1876-1909

An assistant director of GSC in charge of paleontological work and its museum, Whiteaves identified and interpreted many of the fossil collections made by GSC parties in the Foothills and Rockies. Mount Whiteaves overlooks Freshfield Icefield.

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WITNESS TO DISSOLUTION: THE GEOLOGICAL SURVEY OF CANADA AND ROCKY MOUNTAIN HOUSE

David Smyth*

Introduction

In 1799, the first two of at least five different fur trade posts were built by the North West and Hudson's Bay companies at Rocky Mountain House, on the north bank of the North Saskatchewan River, just above its confluence with the Clearwater River. In 1926, more than 50 years after the last of these posts was abandoned, the Historic Sites and Monuments Board of Canada declared Rocky Mountain House to be a National Historic Site; it erected a plaque there in 1931. Then, in 1968, the Board further recommended that the site at Rocky Mountain House be more fully developed. The site was developed and opened by the Canadian Parks Service in the 1970s. Rocky Mountain House National Historic Site remains today as one of five federal historic sites in Alberta.

From 1873 to 1912, five different members of the Geological Survey of Canada (GSC) visited the site of the last fur trade post. Four of these men left at least some type of descriptive record of the post or its remains. These sporadic GSC visits have contributed a great deal to our current understanding of the state of the last fort immediately prior to its final abandonment and of its fate after 1875.

Unlike the sites of many other trading posts in the West, which saw the germination of separate communities about them which long outlived the fur trade in their regions, Rocky Mountain House enjoyed no such continuous occupation. It would be about 25 years after Rocky Mountain House was abandoned by the Hudson's Bay Company (HBC) before permanent European residents returned to the area.

Luckily, many of the members of the GSC were not one-dimensional people. Though without doubt their primary goal was to identify and inventory the geological resources of Canada, they did not restrict their observations to so narrow a focus. They were aware of the wider world around them, not just the earth beneath their feet. The records which these early scientific explorers have left are a gold mine of information for the historian, archaeologist, anthropologist, and physical scientists whose areas are non-geological in nature. The GSC records relating to Rocky Mountain House include: original field notebooks, which in turn contain sketches and maps, besides written daily entries; both printed summary reports of the Survey's seasonal activities and printed reports by individual surveyors; and photographs and articles published in outside journals.

The first member of the GSC to visit Rocky Mountain House was its second Director, Alfred R.C. Selwyn, who was at the post briefly in 1873. Two years later, and immediately after the post's abandonment, R.W. Ells was there. His visit was followed in 1885 by J.B. Tyrrell, who that year was assisted by E.H. Hamilton. Tyrrell was back at the substantially-dismantled Rocky Mountain House in 1886, this time accompanied by D.B. Dowling. Dowling returned to the site in 1912, photographing some crumbling chimneys, then, apparently, the lone visible remains of the once impressive fort noted by Selwyn. All but Hamilton have left material specifically descriptive of Rocky Mountain House, but rich in so many other veins as well. These five men were not the only visitors of the period to witness the dissolution of the post, but taken together this GSC record is the most impressive, and most revealing.

Brief history of the fur trade at Rocky Mountain House

It almost happened that these GSC visitors to the upper North Saskatchewan River had no post at Rocky Mountain House to observe. Since the construction of the first two rival posts there in 1799, the mainstays of the trade had been the three Blackfoot tribes: the Peigan, the Blood, and the Blackfoot proper; their allies, the Gros Ventre (Atsina) and the Sarcee; and, as well, their perennial enemies, the Stoney Indians. However, it was the trade of the three Blackfoot tribes and the Gros Ventre which brought the largest profits. When the American Fur Company on the Missouri River finally broke the Hudson's Bay Company's near monopoly in the Blackfoot trade on the North Saskatchewan River in the

* David Smyth, Historian, Canadian Parks Service.

early 1830s, it marked a period of immediate and rapid economic decline for Rocky Mountain House.[1] By the late 1850s and early 1860s, trade prospects were so bad there and relations had deteriorated to such a point with the Blackfoot tribes that the Hudson's Bay Company was forced to abandon the post in March 1861. The Blackfoot burned the abandoned Rocky Mountain House to the ground that fall.[2]

Though there was initially little or no reason to believe that the company would ever rebuild at that site, by 1864 a number of factors had combined to effect a return to Rocky Mountain House. These included: the need to separate the Blackfoot from the Cree at Edmonton House, where their meetings too often ended in violence; the desire of the company to keep the Blackfoot away from free traders who were then firmly entrenched about Edmonton House; and the renewed hope that the HBC could finally regain all the trade long ago lost to the Americans on the Missouri. The Montana mining rushes of the early 1860s provided more lucrative returns in selling to prospectors and miners than in trading with Indians. The HBC much too optimistically viewed this changed situation, and much too enthusiastically returned to Rocky Mountain House. In 1864 the company hastily built a temporary post to house its men and outfit, and then, beginning in 1865, spent almost three-and-one-half years erecting an overly large and expensive permanent post for which the actually realized trade did not come even close to paying. The glory years were never regained; the site had served as the base for David Thompson's exploration in the early part of the century, and then in the 1820s and early 1830s it had, perhaps, been the most profitable in the HBC's entire North American domain. In the 1860s and 1870s it was an economic drain on the company.

When the North-West Mounted Police arrived in the West in 1874 to establish Canadian law and order, the fate of Rocky Mountain House was sealed. A small HBC camp was established on the Bow River in late 1874, completely eliminating whatever justification might have remained for retaining so northern a post as Rocky Mountain House to attract the trade of the much more southerly located Blackfoot tribes. One year after the arrival of the North-West Mounted Police had made the northern plains safe for trade, the HBC permanently abandoned Rocky Mountain House.[3]

Brief background to the GSC

In 1841 funds were set aside to establish a Geological Survey for the Province of Canada. The GSC officially came into existence the following year, with William E. Logan, its first Director. *"The task of the new Geological Survey was to furnish 'a full and scientific description of the country's rocks, soils, and minerals, to prepare maps, diagrams, and drawings, and to collect specimens to illustrate occurrences'."*[4] However, the role of the GSC was not at all that of a strictly detached scientific institution; its work also had the very practical goal of assisting, through its inventory of resources, in the development of a mineral industry, and a mineral-based manufacturing industry, in Canada.

One of the GSC's first disturbing findings was the absence of coal in the Province of Canada. This *"raised the spectre that within its political boundaries the province of Canada could never be economically self-supporting."*[5] Under Logan's leadership the GSC pushed to the outer edges of its legally defined boundaries in search of minerals to be identified and developed. However, Logan's vision stretched beyond the Province's boundaries to encompass a political and geological whole reaching to the Pacific.[6] Perhaps the, as yet, largely scientifically-unexamined West, Rupert's Land, the territory belonging to the HBC, could fill in some of the geological gaps which hindered the economic and national development of Canada.

Yet Logan was not to oversee this exploration. On the day that the recently confederated Canada was to take possession of these HBC lands, 1 December 1869, his hand-picked successor, Alfred R.C. Selwyn, became the Director of the GSC.[7] Due to the Red River Rebellion, the official land transfer was delayed until July 1870. Selwyn, an Englishman,

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1 Smyth, David (Spring 1984): "The Struggle for the Piegan Trade: The Saskatchewan Versus the Missouri", *Montana: The Magazine of Western History*, Vol. 34, No. 2, pp. 2-15. Piegan is the American spelling and Peigan is the Canadian spelling.

2 Smyth, David (1976): "The Fur Trade Posts at Rocky Mountain House", *Manuscript Report Number 197*, Parks Canada, Ottawa, pp. 36-37 (hereafter cited as Smyth (1976), *MRS No. 197*.

3 Smyth (1976), *MRS No. 197*, pp. 44-45.

4 Winder, C. Gordon (1972): "Sir William Edmond Logan", in *The Dictionary of Canadian Biography*, Vol. X, 1871 to 1880, University of Toronto Press, Toronto, pp. 444-449.

5 Zeller, Suzanne (1987): *Inventing Canada: Early Victorian Science and the Idea of a Transcontinental Nation*, University of Toronto Press, Toronto, p. 74.

6 Zeller (1987), pp. 53-54.

7 Zaslow, Morris (1975): *Reading the Rocks: The Story of the Geological Survey of Canada, 1842-1972*, Macmillan Company of Canada Limited, Toronto, p. 100.

had been the Director of the Geological Survey of Victoria, Australia, from 1852 to 1869, before accepting Logan's offer to succeed him as the second Director of the GSC. Selwyn's and the GSC's most pressing problem immediately became the exploration of the newly acquired West. *"This was almost a terra incognita so far as previous work was concerned ... There were virtually no local experts to be recruited for the task, and precious little earlier geological work on which to rely."*[8] The GSC focussed much of its manpower and resources in the West from 1870, for purely scientific reasons, but also in support of both the proposed transcontinental railway and future settlement.

Selwyn and Rocky Mountain House, 1873

Selwyn immediately made it a priority to familiarize himself with the West. In 1871 he travelled through British Columbia and the next year he followed the proposed railway route from Lake Superior to Red River (Winnipeg). In 1873 his journeys took him across the northern prairies from Red River to Rocky Mountain House. This trip is described in three different sources: his field notebooks; a paper delivered at the Natural History Society of Montreal; and the *Annual Report* of the GSC.[9] The three are quite complementary, each providing at least some valuable information or opinions not found in the other two.

Selwyn described in detail the purpose of his 1873 trip.

> *In view of prosecuting the geological exploration of the vast region lying between Red River and the Rocky Mountains, to the accurate knowledge of which more than ordinary interest attaches at the present time in connection with the building of the Canada Pacific Railway, it was thought desirable to acquire from personal observation such information and general acquaintance with the coal deposits and other mineral and physical features of the region as would facilitate the future direction and superintendence of the work; and the journey to which the present report relates was undertaken last summer chiefly with this object in view, and also to ascertain at what points and in what manner the contemplated boring operations ... could be best carried out in reference to the determination of facts relating to the distribution of workable beds of coal and other useful minerals and to the procuring of fresh water over those portions of the country where the surface waters are for the most part of a saline character.*[10]

Selwyn left Montréal, the site of the headquarters of the GSC, on 7 July and by 14 July was at Fort Garry, Red River, having travelled by train to St. Paul, Minnesota. His official party, as far as Edmonton House, consisted of himself, four associates and two "Scotch half-breeds", but they were joined by two English travellers and their two servants, bringing the total "expedition" size to 11 persons in all. The combined party travelled by land from Fort Garry in seven Red River carts and one buckboard. Selwyn measured the distance travelled with an odometer attached to a cart wheel. He put the overland distance between Fort Garry and Rocky Mountain House at 1 056 miles, about 170 of which made up the route from Edmonton House to the upriver post. On his return trip, by boat, he estimated the distance at some 1 295 miles.[11] In his report, Selwyn made constant references to and comparisons with the findings of the Palliser Expedition of 1857-1860, a British-sponsored scientific party which had preceded him over much of his 1873 route, and the first such scientific expedition to explore the northern plains and the Rockies.

Selwyn's party reached Edmonton House on 6 September. Three days later, accompanied only by a local guide, John Gallion, Selwyn set off by buckboard for Rocky Mountain House. He reached the ultimate destination of his trip on 12 September. When he got there, Rocky Mountain House, as a physical entity, was probably at its zenith in terms of size, quality of construction and materials, and overall condition. However, as a fur trade centre, it was at or near its all-time nadir; it had been virtually abandoned by its traditional native customers.

Selwyn remained only one day at Rocky Mountain House. However, he left a considerable record of this brief stay. His field notebook contains a tiny, yet detailed, sketch of the fort, with dimensions, and a small map of the trail

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8 Zaslow (1975), p. 105.

9 *Notebook No. 2722* (hereafter cited as *Selwyn Notebook*), National Archives of Canada, (hereafter cited as NAC), RG 45, Vol. 171; Selwyn, A.R.C. (1875): "Notes on a Journey Through the North-West Territory from Manitoba to Rocky Mountain House", *The Canadian Naturalist and Quarterly Journal of Science*, Vol. VII, No. 4, pp. 193-216 (hereafter cited as Selwyn, "Notes"); and Geological Survey of Canada, *Report of Progress For 1873-74*, pp. 17-62. These annual reports of the GSC appear under various titles over the years. To simplify matters the author will hereafter uniformly refer to them as *Annual Report*, with the appropriate date for each citation. Other notebooks will be referred to in the same way as Selwyn's.

10 *Annual Report* (1873-74), p. 17.

11 *Annual Report* (1873-74), pp. 18-19.

across the Clearwater River to the North Saskatchewan and the post. He also took a photograph of the fort which, if it had turned out, would have been the only photo showing a considerable portion of any of the posts at Rocky Mountain House.[12] Unfortunately, it did not turn out. Selwyn later reported, *"A few photographic views were secured, but the majority of the plates which were exposed, from some unexplained cause — probably insufficient exposure — unfortunately showed no image when subsequently submitted to the developing process."*[13]

He described Rocky Mountain House briefly.

> *This Fort is like all the HB forts in this country a rectangular palisaded Enclosure 70 Yard X 70 with square towers at each corner & the houses stores workshops &c inside ... Growing at the Fort are potatoes, onions, carrots, turnips, cabbages_ the latter will only be fit to use as "greens". The potato tops are quite cut down by the frost, but the tubers are of a fair size & good_ Barley quite green & partly frosted.*[14]

He also identified a nearby coal seam "mined" for use at the post forge. After borrowing a boat from Angus Fraser, the company employee left in charge of the fort during that summer, Selwyn, Gallion, and "a Half-Breed lad" drifted off downstream for Edmonton House at 1:30 p.m. on 13 September. Selwyn made rough calculations of the distance travelled, drew sketch maps of the river route, and identified on these maps and in his journal entries key points of interest, including sites of previous fur trade posts and of significant coal seams.

After his return to Montréal, Selwyn wrote that *"the most important fact ascertained was the occurrence on the North Saskatchewan River, between Edmonton and Rocky Mountain House, of a number of flat-lying workable seams of good coal."*[15] The presence of relatively easily accessible coal seemed crucial to Selwyn, not only to meet the needs of the coming railway, but as fuel for settlers, since there was such a shortage of timber over much of the "Fertile Belt".[16] Selwyn noted that he had not seen a single buffalo during his trip across the plains, and recommended cattle-raising as the possible future salvation of the Plains Indians.[17] He also commented on the possibility of steam navigation on the North Saskatchewan River, and noted the wreck of the HBC's first Saskatchewan steamer in 1873. He saw no reason why properly designed steamers could not reach as far up as Rocky Mountain House.[18] This was somewhat overly optimistic, but HBC steamers soon were regularly travelling to Edmonton House.

R.W. Ells and Rocky Mountain House, 1875

In the summer of 1875 another geologist, R.W. Ells, who was with the GSC from 1872 to 1911 visited Rocky Mountain House.[19] Ells' task that season was twofold, *"to superintend the boring operations about to be carried on in the Saskatchewan district, and also to collect as far as possible a suite of specimens representing the Economic minerals of the Territory for the Centennial Exhibition."*[20] Boring operations seemed the only solution to the geologists' dilemma on the prairies.

> *Geologists working in the prairies were faced with the difficulty of reaching satisfactory conclusions where the bedrock was almost entirely covered with drift. Without outcrops to observe, the geologist was lost, so borings seemed the answer, particularly since chances were good that coal, oil, salt, or artesian water might be discovered in the process. The Pacific Railway survey was sufficiently interested in ascertaining the mineral resources along its proposed route to pay half the cost of securing a drill.*[21]

Ells' boring equipment weighed about 10 000 pounds and was extremely clumsy to manoeuvre. Hampered by transportation problems and then the refusal of the Plains Cree to allow government expeditions on their land, at least prior to the signing of a treaty, Ells was forced to limit his boring operation to a single drill site, an old well at the fur trade post of Carlton House, on the lower North Saskatchewan River. Even there the problems did not end. After drilling straight down 175 feet, they had still not struck bedrock, and never would that year.

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12 *Selwyn Notebook*, fol. 63, 13 September 1873.

13 *Annual Report* (1873-74), p. 18.

14 *Selwyn Notebook*, fols. 62-63.

15 *Annual Report* (1873-74), p. 18.

16 *Annual Report* (1873-74), p. 53.

17 *Annual Report* (1873-74), pp. 60-61.

18 Selwyn, "Notes", pp. 213-215.

19 Zaslow (1975), p. 557.

20 *Annual Report* (1875-76), p. 281.

21 Zaslow (1975), p. 116.

Ells left Carlton House in late July to fulfill the second half of his duties, the gathering of exhibit specimens for the 1876 U.S. Centennial Exhibition at Philadelphia. Travelling by buckboard with a single companion, he headed for Edmonton House. There he hoped to travel upriver by boat to the "big coal seam" described by Selwyn in 1873. However, he was unable to arrange for a crew and was forced to go overland to Rocky Mountain House, from there to boat downriver to the seam.[22]

In his printed report Ells provided no description of Rocky Mountain House, deserted by the HBC by the time of his arrival on 17 August. Luckily for Ells he found "a good skiff hauled up" on the bank of the Clearwater River, close to Rocky Mountain House. Apparently without any knowledge of the owner, and also apparently without any qualms whatsoever, he took the boat. He proceeded to the post, where he noted: *"Found the Fort entirely deserted save by dogs_ and took possession_ found good potatoes & Turnips growing in garden along side and helped ourselves_ This Fort like Edmonton is on the North Side the River."*[23]

Ells and his companion, the same Gallion who had earlier accompanied Selwyn to Rocky Mountain House, then drifted down river to Selwyn's "big seam", where Ells retrieved a large sample of coal. He continued in this conveyance all the way to Carlton House, stopping periodically to gather more geological specimens. At Carlton House he was forced to halt the boring operation, for lack of proper casings. It was the last time until the early 1880s that the GSC attempted a similar undertaking on the prairies.[24]

The fate of the abandoned Rocky Mountain House

It was long believed in the 20th century that sometime shortly after its abandonment Rocky Mountain House simply burned down. This was not the case. HBC records, the reports of other visitors to the site and, particularly, the descriptions and photographs provided by J.B. Tyrrell of the GSC refute this assertion.

The HBC was more than willing to abandon the site, but not the tremendous investment that it had made in the construction of the last post at Rocky Mountain House. In the summer of 1876 the company probably tried to float one of the post's dismantled buildings down to Fort Pitt, located between Edmonton House and Carlton House.[25] That same year an estimate was to be provided on the cost of dismantling the store at the abandoned post and rafting it to Carlton House. In the summers of 1877 and 1878 men from Edmonton House were at Rocky Mountain House, almost certainly proceeding with the dismantling of that fort. There is evidence that again in 1880 and 1882 further dismantling was undertaken, the materials to be used at various downriver company posts.

J.B. Tyrrell and Rocky Mountain House, 1885 and 1886

While the record left by Ells was skimpy, to say the least, those of Joseph Burr Tyrrell's two visits to the site of Rocky Mountain House were incredibly informative in a number of ways. Tyrrell, whose achievements included those of geologist, explorer and historian, was with the GSC from 1881 to 1899.[26] Concerning his brief visits to Rocky Mountain House, he left in his GSC records: two photos of the ruins; written descriptions of the site in his field notebooks; and, in the printed reports, not only a history of the fur trade at Rocky Mountain House and on the Saskatchewan River, but also a Cree and Stoney vocabulary of select Alberta and Saskatchewan area place names.

In the summer of 1885 Tyrrell, *"assisted by Mr. E.H. Hamilton, continued the examination of the country north of the Bow River and south of the North Saskatchewan, including an area of about 27,000 square miles, lying between 110° and 115° west longitude."*[27] Tyrrell visited the ruins of Rocky Mountain House on 22 October 1885, only to discover that another surveyor had recently preceded him there, the evidence being a new survey post.[28]

Tyrrell's predecessor was Joseph Doupe, a land surveyor then conducting a traverse survey of the North Saskatchewan River from Rocky Mountain House to Township 50, Range 4, west of the 5th Meridian. Doupe had been at Rocky Mountain House for at least a week before his departure downriver on 9 October. In his report of the survey he noted, *"Rocky Mountain House, or the Mountain Fort (or rather the site thereof, for all that remains are three bastions and one old building), is on the north bank of the Saskatchewan River, on a beautiful plateau about 40 feet above the stream."*[29] In his

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22 *Annual Report* (1875-76), pp. 286-288.

23 Ells, *Notebook No. 2247*, fols. 96-6d., 17 August 1875, NAC, RG45, Vol. 124.

24 Zaslow (1975), p. 116.

25 Smyth (1976): *MRS No. 197*, pp. 152-156.

26 Zaslow (1975), p. 564.

27 *Annual Report* (1885), p. 46A.

28 Tyrrell, *Notebook No. 1879*, fol. 44, 22 October 1885, NAC, RG45, Vol. 173.

29 Canada (1885): *Annual Report of the Department of the Interior*, Part II, p. 38.

field notes, he drew a sketch plan of these remains.[30]

Less than two weeks after Doupe's departure, Tyrrell confirmed the state of the once proud fort. *"It is now a deserted ruin, nothing but the forge house & three of the corner bastions being left standing there, latter now used only by partridges & ravens. A considerable quantity of timber with a little lumber is lying close to the bank of the river, having evidently been part of some of the houses at one time."*[31] The dismantling was still continuing. Tyrrell then went on to note that according to his Indian companion the ground between the Saskatchewan and Clearwater rivers, just across from the ruins, had been *"a favorite battle ground for the Blackfeet & Stonies."*[32] Hamilton apparently did not make the short trip from camp on the Clearwater to the fort site, and his surviving field notebook contains no reference whatsoever to Rocky Mountain House.[33]

Tyrrell returned to the West in 1886, by train to Calgary. Assisted by D.B. Dowling, he *"was occupied during the entire summer in completing the geological exploration and examination of the country between the Bow and the North Saskatchewan River, east of the 115th meridian."*[34] Tyrrell was back at the confluence of the North Saskatchewan and Clearwater rivers in mid-September 1886, having brought with him materials with which to construct a boat. His party was there from 15 to 18 September. Tyrrell took a break from the boat building one evening and *"drove over to the Saskatchewan and took two pictures of Old Rocky Mt. House but beyond that had no time to spare from the boat."*[35] Now only two bastions, not three, remained standing, along with several chimneys and, perhaps, the forge house. When the boat was completed Tyrrell and party set off on 19 September to Edmonton, making a geological examination of the banks of the North Saskatchewan River. Dowling's surviving field notebooks do not cover the dates spent in the vicinity of Rocky Mountain House.[36]

Tyrrell's report of his field work for 1884, 1885, and 1886 was printed in the 1886 *Annual Report* of the GSC. It is not only a most thorough summary of his field work, but quite a comprehensive history of previous European presence in the area of his surveys. In an appendix, he provided four full pages of Indian names, both Cree and Stoney, for most of the places covered by his three years of work, and shown on a map accompanying his report. The Cree for Rocky Mountain House he gave as *Kat-as As-sin-watt Was-ka-higan.* In Stoney, it was *Ti-sht-a.*[37]

D.B. Dowling's return to Rocky Mountain House, 1912

Dowling was a topographer and geologist who was employed by the GSC from 1885 to 1925. Merely Tyrrell's assistant in 1886, by the early 20th century he had become for the prairies *"the leading authority on the regional geology and mineral occurrences, [where] the work was to map formations that contained workable deposits of coal, petroleum, natural gas, gypsum, and salt, especially, to assist the expansion of the coal mining and petroleum industries."*[38] At some point in 1912, Dowling returned to Rocky Mountain House, taking several photos of the ruins of the fort, ruins which by then consisted of little more than crumbling chimneys and cellar depressions. Unfortunately, neither his surviving field notebook for that year nor any of the GSC's printed reports provided the slightest detail of his visit, not even the approximate time of it in 1912.[39] Even more unfortunate is the fact that all but one of these Dowling photos have apparently been destroyed over the years.[40] The sole survivor somehow ended up in the Canadian Parks Service collection. It shows three chimneys, but is slightly out of focus.

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30 Joseph Doupe, "Field Notes of Traverse Survey of North Saskatchewan River from Rocky Mountain House to Township 50 Range 4 West of the 5th Initial Meridian, North-West Territories", 2-27 October 1885, p. 1, Alberta, Transportation Surveys and Property Branch.

31 Tyrrell, *Notebook No. 1879*, fol. 44, 22 October 1885.

32 Tyrrell, *Notebook No. 1879.*

33 Hamilton, *Notebook No. 2638*, NAC, RG45, Vol. 153.

34 *Annual Report* (1886): Vol. II, p. 9A.

35 Tyrrell, *Notebook No. 1885*, fols. 15-5d, NAC, RG45, Vol. 173.

36 Dowling, *Notebooks Nos. 2642, 2643* and *2644*, intermittently covering period from 21 May to 22 October 1886, NAC RG45, Vol. 140.

37 *Annual Report* (1886): Vol. II, Appendix 4, p. 176E. Tyrrell's diacritical marks have not been reproduced here.

38 Zaslow (1975), pp. 293 and 557.

39 Dowling, *Notebook No. 343*, NAC, RG45, Vol. 201; *Annual Report* (1912), p. 3; and *Annual Report* (1913), pp. 150-152.

40 NAC, Documentary Art and Photography Division, and the library of the GSC.

Summation

Today Rocky Mountain House National Historic Site is an important part of the Canadian Parks Service system. At various times in its 76 year history as an active fur trade centre this site enjoyed both strategic significance, as a base for early exploration, and extremely high financial success. The five members of the GSC who visited this site, however, witnessed its last gasp and then its virtual complete dismemberment and disintegration. The records which four of these GSC visitors left have helped us to know the physical make-up of the last of the forts there, and its fate after its final abandonment in 1875. This knowledge has been of great assistance in the development of the Site and the interpretation of its history. However, the records left by both Selwyn and Tyrrell are of special interest, beyond the narrow confines of a specific park's boundaries or individual site's history. These two men, and many of their colleagues who journeyed elsewhere for the GSC, have left critically important records of life and expectations in the West and North at the time when massive white settlement was about to replace its forerunner, the far less intrusive fur trade, at a critical time when traditional native ways of life were being forever changed.

ALFRED SELWYN IN AUSTRALIA AND CANADA

Vern T. O'Brien*

Alfred Richard Cecil Selwyn was the son of the Reverend Townshend Selwyn, Canon of Gloucester, and Charlotte, the daughter of Lord George Murray, Bishop of St. David's in Wales. Educated by private tutors and later in Switzerland, he became interested in geology by collecting fossils at an early age. In 1845 Selwyn joined the staff of the Geological Survey of Great Britain; he worked mainly in Shropshire and North Wales, producing a splendid series of geological maps with A.C. Ramsay and J.B. Jukes and also working on the British coalfields.

His brother, Arthur, a Minister in Queensland, Australia, indicated prospects in Australia to him. Alfred Selwyn noticed the Victorian Government appealing for a mineral surveyor and took up the position of Director of the Geological Survey of Victoria, arriving in Melbourne in November 1852.

Mapping 1 000 square miles each year in Victoria, with two assistants and a horsekeeper, was a formidable task. Selwyn was ably assisted by H.Y.L. Brown, R. Etheridge, and C.S. Wilkinson. Under his direction, the Victorian Geological Survey issued 61 geological maps and numerous reports in the period 1853 to 1869. In 1855, Selwyn surveyed coal seams in Tasmania and in South Australia's eastern region

Alfred Selwyn

(Source: V.T. O'Brien)

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including the Flinders Ranges. In 1856 near Bendigo, he discovered the first graptolites found in Australia. In the Inman Valley, he recognized evidence of glaciation at a site known as *Selwyn Rock*.

The *Australian Dictionary of Biography* entry speaks of his influence in Australian geology:

> *"Selwyn's undoubted dominance in Australian geology owes something to the scientific climate of the 1850's, which was one of transition from amateur to the professional, from occasional to the systematic; but this situation does not denigrate his achievement, for he had the necessary stature to implement change. He brought a vigour to the study of geology that it never could have gained from, say, the work of Clarke. It is arguable that Selwyn's greatest achievement lay not in his own work but in the legacy to Australia of a generation of geologists imbued with his ideals. Within a few years the disbanded Victorian survey was making its influence felt over the whole of Australia."*

His appointments to the Mining Commission (1856), Board of Science (1855), and London International Exhibition (1862) are indicative of the range of Selwyn's work and his stature as a professional. However, the Victorian Government abruptly terminated his work in 1869, thus necessitating his move to Canada. Selwyn was appointed as the second Director of the Geological Survey of Canada in 1869 and held this position until 1895.

In 1885, when British politician Lord Rosebery visited South Australia, the **County of Rosebery** was declared over the Northern Territory Goldfield, and the **Hundred of Selwyn**, a new Hundred covering the mineralised area, was declared as well. George Goyder, Surveyor General of South Australia, had recommended these names to the South Australian Government.

Toponyms for geographical features from Ontario to British Columbia and in the Yukon and Northwest Territories commemorating Selwyn include: **Mount Selwyn, Selwyn Inlet, Selwyn River, Selwyn Range**, and **Selwyn Island**. Several features were named by other geologists (such as GSC's Robert Bell, George M. Dawson, and Joseph Keele). Others were named in the 1880s by people who admired Selwyn or his work, including the British writer and alpinist, William S. Green, and the American explorer, Lieutenant Schwatka. In the 1940s, the names **Alfred Point** and **Cecil Cove** were proposed, by the Canadian Hydrographic Service, in association with Selwyn Inlet (in the Queen Charlotte Islands). Even Selwyn's birthplace was commemorated - by **Kilmington Point**, located near Selwyn Inlet.

Selwyn's work had brought him honours in Australia and, after he had left for Canada, the Royal Society of New South Wales awarded him the Clarke Medal in 1884. But honours were also accorded to him in Canada, for example, from the Royal Geographical Society (1871) and the Royal Society (1874). He was honoured by being the Murchison Medallist of the Geological Society in 1876 and later Queen Victoria honoured him with an Order (C.M.G.) in 1886.

His devotion to accuracy and scientific truth brought the hard taskmaster great respect from his profession and from his mining colleagues. He died in Vancouver on 18 October 1902, and was buried in Mountain View Cemetery.

GEOLOGISTS IN THE MARITIMES

Kathleen O'Brien*

W.F. Ganong named **Geologists Range** in New Brunswick in 1899 but it was not until 1969 that the name was officially recognized. Within this small group of mountains, Ganong named several of the features after employees of the Geological Survey of Canada. **Mount Bailey** was named after Loring Woart Bailey, in 1864 the first to describe this area geologically. Robert Chalmers, a surficial geologist, was commemorated by **Mount Chalmers**. Robert Wheelock Ells was in this area in the 1880s to investigate its geology. **Mount Ells** is Ganong's tribute to him.

Just south of Geologists Range, A.F. Wightman named **Mount Wright** after William J. Wright, New Brunswick Provincial Geologist. Wright had worked for the GSC on a temporary basis from 1909 to 1920. Mount Wright was adopted in 1964 but its position was altered a short distance to the east in 1969. The original location was already named Trafton Mountain.

Mount Adams and **Adams Brook** probably owe their names to Frank D. Adams. He was a petrographer for the GSC and a member of R.W. Ells' geological survey party, which worked in this area of New Brunswick.

Faribault Brook in Nova Scotia's Cape Breton National Park was named after Eugène Rodolphe Faribault, geologist with the GSC from 1882 to 1932. An exhibit at the Acadia University Art Gallery in May 1992 displayed several photographs taken by Faribault in the course of his work.

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* Kathleen O'Brien, CPCGN Secretariat.

THE GEOLOGICAL SURVEY OF CANADA'S IMPACT ON MANITOBA TOPONYMY - YESTERDAY AND TODAY

Gerald F. Holm*

I am pleased for this opportunity to help celebrate the 150th anniversary of the Geological Survey of Canada (GSC) and to witness briefly the legacy this institution has left in Manitoba's geographical nomenclature.

A significant contribution

One does not search long for evidence of the influence of GSC scientists when it comes to place names. Records reveal that **Asham Point** was named by Dr. J.B. Tyrrell after one of his canoemen, and **Molson Lake** was named by Dr. R. Bell after his assistant, Charles A. Molson. To be sure, many features were named at the time of exploration by members of the GSC, but one of the most significant contributions to the science of toponymy was the recording of the local native names. This was well-documented in the Introduction to *Place-Names of Manitoba*, published for the Geographic Board of Canada in 1933:

> *'Many of the Indian names now firmly established are due to the officers of the Geological Survey, including Dr. R. Bell in the 1870's and Dr. J.B. Tyrrell and Dr. D.B. Dowling in the 1880's, who, in travelling through the province found that the English names in use were for the most part duplicates of other names used in the Northwest. They adopted the Indian names and by placing them on their maps have secured their permanence.'*

This publication contains many references to Dr. Tyrrell as the source of native names like those mentioned above, e.g., **Wuskwatim Lake** (not *Beaver Dam Lake*). His work is also prevalent in the recording of the original native names for those English names retained. Examples of this are **Knee Lake** *(maskistigwan sakahigan)* and **Landing Lake** *(suskiskwegimew sakahigan* meaning *where the sturgeons put their heads against the rock lake).*

References as valuable today as ever

It is common knowledge among those working in geographical names that the early GSC reports are important references for toponymic research today. One example of this occurred during the designation of **Kettle Stones Provincial Heritage Park** in Manitoba.

Heritage parks represent landscapes or sites which are one-of-a-kind in Manitoba. They are intended to preserve and interpret key elements of the province's natural and cultural history. Features locally known in the Swan Lake area as *kettles* have been geologically identified as sandstone concretions. These features were formed through a process of chemical precipitations in-site, in an ancient beach location. Concretions of this size occur in only three other known locations in Canada and as such are popular in the local area and will be of considerable interest to tourists.

The Manitoba Geographical Names Program was given the opportunity to review the name of the park to expedite the plan and Order in Council preparation. The origin data recorded for **Kettle Hills** provided the first indication that further research would be required:

> *'First noted on a Bulman map, 1903, and earlier on a Dept. of Int. map, 1890, as Kettle Hill. According to recent field work, the name is descriptive; apparently there are several large, rounded, flat-bottomed stones here which resemble kettles, or kettledrums, possibly glacially formed and deposited, or gathered here as a result of early Indian activity. The name was changed from Kettle Hill to Kettle Hills on May 13, 1977 to agree with established local usage.'*

Archival research conducted for this small project proves the value of the work of members of the Geological Survey of Canada more than 100 years ago. On close examination of J.B. Tyrrell's report, one can appreciate the stones are not a result of 'glaciation' nor 'deposited' nor gathered there as a result of early Indian activity. Studying the *Geological Map of North Western Manitoba* by J.B. Tyrrell and D.B. Dowling, 1891, in the Provincial Archives, one finds

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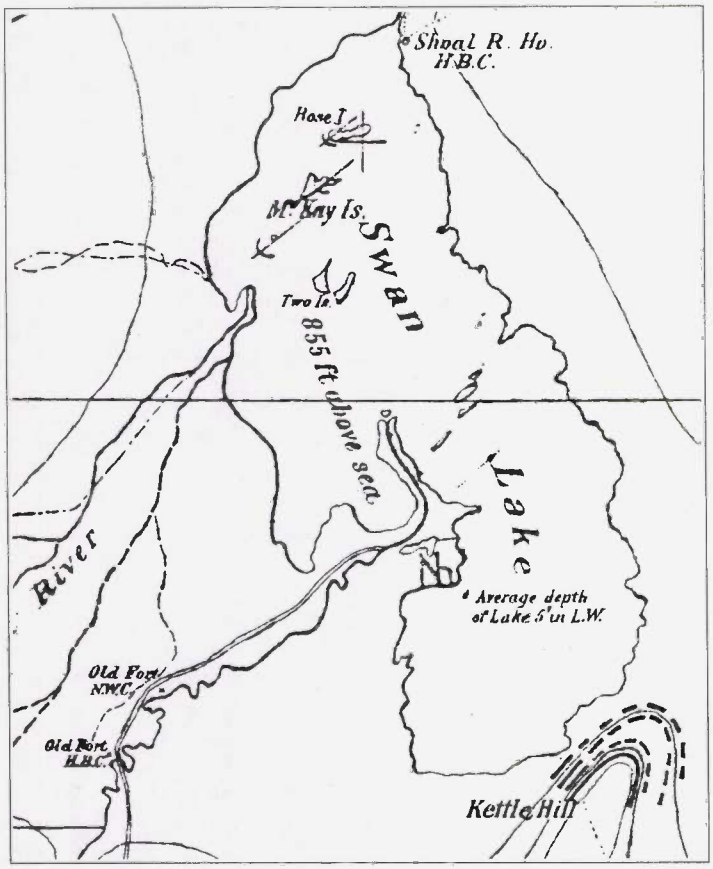
* Gerald F. Holm, Manitoba member, Canadian Permanent Committee on Geographical Names.

the name *Kettle Hill* applied to a relatively large feature just southeast of Swan Lake.



A portion of the *Geological Map of North Western Manitoba* by J.B. Tyrrell and D.B. Dowling, 1891, showing Kettle Hill, south of Swan Lake

Further investigation into the Geological Survey of Canada *Annual Report*, Volume V, Part 1, 1890-91, relates J.B. Tyrrell's description of the area (pages 75E and 76E):

> *'Close to this spring a bridle trail to Pine Creek enters the woods ... and then ascends a hill* [Kettle Hill] *with a total height, as determined by the aneroid, of 274 feet above the lake. On its face are six distinct terraces, the brows of which are 75, 113, 151, 170, 198 and 236 feet above the lake, the highest one rising in a long slope to the summit. The highest slope up to 236 feet is very steep, and appears to consist of sand and pebbles, while a great number of boulders of gneiss and limestone are scattered on the brow of this terrace.*
>
> *The summit is composed almost entirely of reddish sand, underlaid by rounded pebbles, with boulders and gneiss, limestone and white Dakota sandstone scattered here and there. The surface, which is slightly irregular, is thinly wooded with small Banksian pines and a few oaks. Towards the north-east the terraces are wider and more distinct than on the line of the trail. They are generally sandy and sparsely wooded, and on one of the highest terraces, at an elevation of about 200 feet above the lake, are many bare, rounded or hemispherical masses of white Dakota sandstone, from eight to twelve feet in height, with their planes of stratification horizontal, and apparently lying where they were eroded out of the soft sandstone of the base of the Cretaceous. They show no signs of glacial action and have clearly been formed in post-glacial times, when the waves of Lake Agassiz cut this terrace in the face of the pre-existing slope.'*

Based primarily on this detailed description of the area, the name **Kettle Stones Provincial Heritage Park** was chosen because it clearly describes the type of unique feature which is being protected within the bounds of the park. Also taken into consideration was the term *stone(s)* found in the publication *Generic Terms in Canada's Geographical Names* published jointly by the Translation Bureau and the Canadian Permanent Committee on Geographical Names (CPCGN).

The name was confirmed on a decision list of the Canadian Permanent Committee on Geographical Names dated December 5, 1991, more than 100 years after D.B. Dowling took his photo titled "Rounded Bosses of Dakota Sandstone" on September 3, 1889.

A proud history

Each and every time one has an opportunity to study the wealth of information in a GSC report, it gives him/her a chance to dream of being in the scientist's shoes when he found unique features such as these ***kettles***. Not one person would envy them the great hardships they had to face, and continue to face in their work to assess our resources and record our history - a history full of adventure and scientific excellence.

* * * * * *

THE GEOLOGICAL SURVEY OF CANADA

ON LAKE NIPIGON

G.B. Leech*

The map of Lake Nipigon is studded with the names of geologists. Almost two dozen islands are named for Canadian, British, and American geologists, sixteen of whom were members of the Geological Survey of Canada (GSC).

Although Lake Nipigon appeared, unnamed, on a map as early as 1671,[1] it remained unsurveyed until 1869. In that year Robert Bell of the GSC, assisted by Peter McKellar, travelling in birch bark canoes, surveyed its perimeter and the lower parts of major inflowing streams and sketched the positions of some of the islands. Bell's map, dated 1869, was published the next year.[2] He revisited the lake in 1871, crossing it en route to the Albany River, charting islands as he went. In 1894 W. McInnes and D.B. Dowling of the GSC refined the survey of the lake's perimeter. Dowling returned in 1898 and, using a sailboat, made a triangulation survey of the islands. The summary reports published immediately after the 1871, 1894, and 1898 field seasons did not include maps.

All the above surveys were made in the course of geological explorations to provide the necessary base maps on which to plot geological information. All of them contributed to the map A.W.G. Wilson compiled to accompany his GSC report on the geology of the Lake Nipigon basin.[3] The names of all the geologists now commemorated on Lake Nipigon appear on this map. Clues as to when and by whom they were first introduced lie mostly in the geological surveyors' original plotting sheets and manuscript maps, held now in the National Archives.

Amerindian names, and their derivatives, are prominent for the names of rivers and lakes on today's maps of the Lake Nipigon region. Not so for the toponymy of the lake itself, except for some large bays. The island names are almost all non-Indian.

Bell consulted Indians early in his Nipigon work and they drew for him two remarkable maps. One, which he annotated as *"Drawn by Windigo (chief) NE side of Lake Neepigon and another Neepigon Indian and corrected by seven other Indians and others"*[4] portrays the whole lake; the other shows the southwestern part. It is difficult to relate details of the Windigo map, islands especially, to later maps. Original problems of positioning were compounded by distortion of the northern part because of running out of space and crowding against the edges of the largest piece of paper Bell could provide. Nevertheless, the lineages of many Lake Nipigon names start here.

Bell stated: *"In regard to geographical names, we endeavored to ascertain all those used by the Indians ... These we always adopted in preference to any others ... There are, however, many geographical features for which the Indians appear to have no distinctive names. When names of any other origin existed for these, we always adopted them. There still remained many localities for which we could hear of no designation whatever, and it then became necessary, for the convenience of description, to give names of them."*[5]

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* G.B. Leech, Retired Director, Economic Geology Division, Geological Survey of Canada, Ottawa.

1 Wilson, A.W.G. (1910): *Geology of the Nipigon basin, Ontario*, Memoir 1; accompanied by map entitled "Lake Nipigon, Thunder Bay district, Ontario" (Map # 8A, scale 4 miles to 1 inch), Geological Survey of Canada, 152 p.

2 Bell, R. (1870): "On the geology and economic minerals of the northwest coast of lake Superior and adjoining country from Pigeon river to Black bay, Black Sturgeon river, Nipigon river and lake Nipigon"; accompanied by map of the Thunder Bay and Lake Nipigon regions (map No. 78, scale 4 mi. to 1 inch, 3 sheets, dated 1869) in *Report of Progress from 1866 to 1869*, Geological Survey of Canada.

3 Wilson (1910), "Map 8A".

4 Windigo and others (1869): Unpublished "Sketch map of Lake Nipigon", annotated by R. Bell, National Archives of Canada, NMC No. 21734.

5 Bell (1870), p. 341.

He wrote a host of names on the natives' sketch maps, far more than he ever used in descriptions, in a pattern that survives today: Amerindian names on important rivers and some larger bays and points, non-Amerindian names on most other shoreline features, and, almost exclusively, on islands. The paucity of Amerindian names recorded for islands may be due partly to Bell's adoption of translations already in use (e.g., some of the descriptive and animal names along canoe routes to and between trading posts) but probably the main cause for this deficiency was that he did not ask about them. Bell's most intensive questioning of the Indians would have been about the rivers and lakes used as canoe routes through the hinterlands, where his main challenges lay.

Clusters of surnames stand out on these sketch maps as Bell's exotic introductions, some, perhaps, suggested by Peter McKellar. Among them are: explorers (Grant, Livingstone, Mungo Park, Speke); writers (Chaucer, Shakespeare); politicians (Tilley, Tupper); scientists and naturalists (Hooker, Humboldt, Linnaeus), and, especially from this group, geologists. There are Canadian geologists (Billings, Dawson (J.W.), Hoffmann, Hunt, Logan); American geologists (Dana, Hall, Silliman); and British geologists (Lyell, Murchison, Ramsay, Playfair). About twenty percent of the surnames that Bell wrote on the natives' sketch maps survive on today's maps.

Bell's published map[6] shows relatively few named islands. The "geological" islands are named for W.E. Logan, founding director of the Geological Survey of Canada; A.R.C. Selwyn, his then newly-arrived successor; the British geologists Lyell, Murchison, and Ramsay; and the American geologist Hitchcock.

Bell's unpublished plot of his 1871 traverse of the lake includes islands named for the Canadian geologists E.J. Chapman of the University of Toronto; J.W. Dawson, Principal of McGill University; and G.C. Hoffmann and T.S. Hunt of the GSC.

The main introduction of names of Canadian geologists is on an unsigned, undated GSC manuscript map of Lake Nipigon on which is plotted a triangulation survey positioning the islands. This is attributed to D.B. Dowling. It incorporated information from the field work of McInnes and Dowling in 1894 and Dowling in 1898.

On this manuscript map appear for the first time at Lake Nipigon the names of the following former and contemporary members of the GSC: Barlow, Bell, Dawson, Ells, Faribault, Fletcher, Ingall, Macoun, Murray, Ord, Vennor, and Whiteaves. McKellar is the other Canadian geologist named. The map retains the GSC names introduced by Bell: Billings, Hoffmann, Hunt, Logan, and Selwyn, though, except for Logan's, their positions differ from those on the cruder, early plots. The British geologist Geikie joins Bell's Lyell, Murchison, and Ramsay. The Americans Hall and Hitchcock appear also.

The Dawson honoured on this map was G.M. Dawson, contemporary director of the GSC. The Dawson whom Bell had honoured in 1869, when G.M. Dawson was still a student, was the father, J.W. Dawson. (By 1898 Bell had strong feelings about being passed over when the younger man was selected as director.) The small island that Bell named for J.W. Dawson, unnamed on the "Dowling map manuscript", is one of the present McIvor Islands.

In 1910, the geologists named on the "Dowling map manuscript" were named again in the same positions, with no new companions, on the geological map of the Nipigon Basin.[7] All names were subsequently approved by the Geographic Board of Canada or the Canadian Board on Geographical Names. The feature named after Ingall was renamed in 1978. (Ells Island has appeared erroneously as Ellis Island on some maps of other organizations.)

In the following notes on geologists commemorated at Lake Nipigon, much information and most of the dates of service of GSC members came from *Reading the Rocks*.[8]

Barlow Island NTS 52 I/2
Barlow, Alfred E. (1861-1914) GSC 1883-1907

One of a family of three Barlows who contributed to geology in Canada, A.E. Barlow became known internationally for his studies of the Canadian Precambrian Shield and mineral deposits related to igneous rocks, e.g., Sudbury nickel ores. His father, Robert, was the GSC's original chief draughtsman (GSC 1856-1880); his brother, Scott (GSC 1856-1894), after work on Nova Scotia coal fields, succeeded the father as chief draughtsman.

Bell Island NTS 52 H/15
Bell, Robert (1841-1917) GSC 1869-1908

Geologist-naturalist-explorer with degrees in civil engineering and medicine, Bell began his GSC career as a teenaged field

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6 Bell (1870), "Map No. 78".

7 Wilson (1910), "Map 8A".

8 Zaslow, M. (1975): *Reading the Rocks: The Story of the Geological Survey of Canada, 1842-1972*, Macmillan Company of Canada Ltd., Toronto, pp. 555-564.

assistant (1857), did seasonal field work until joining the permanent staff (1869), became an assistant director (1877), and was acting director (1901-1906). In his great reconnaissance journeys through the western plains, northern Manitoba, northern Ontario, Quebec, and Hudson Bay, he recorded information on the terrain, geology, flora and fauna, climate, and native people. Through his GSC reports, popular accounts, and lectures he had an important role in making vast parts of Canada known in Canada and abroad. Almost everywhere, he had to make his base maps as he went. In consequence, Bell probably initiated the present names of more Canadian geographical features than any other person.

Billings Island NTS 52 I/2
Billings, Elkanah (1820-1876) GSC 1856-1876

The GSC's, and Canada's, first paleontologist was born at Billings Bridge (now part of Ottawa). His activities as a lawyer and newspaper editor gave way to his interest in natural history, especially paleontology, on which, self-taught, he first published authoritatively in 1854.

Dawson Island NTS 52 H/15
Dawson, George M. (1849-1901) GSC 1875-1901

Termed the father of geological understanding of British Columbia, the Yukon and much of Alberta, Dawson first earned respect as the geologist and botanist to the Commission demarcating the International Boundary from Lake of the Woods to the Rockies, 1873-1874. From 1875, despite severe physical disability, he accomplished 20 years of exploratory traverses of remote and rugged terrains. A brilliant geologist, he reported on the gamut of natural history and made noteworthy records of Indian vocabularies. He named many geographical features, taking particular care to retain native names. He was appointed as an assistant director of GSC in 1877 and served as director from 1895 until his untimely death.

Ells Island NTS 52 I/2
Ells, Robert W. (1845-1911) GSC 1872-1911

Ells reported on the geology and mineral deposits of, successively, New Brunswick, Eastern Townships of Quebec and the Ottawa Valley region of Ontario and Quebec. In the mid-1870s, he conducted pioneer drilling projects in New Brunswick and Saskatchewan.

Faribault Island NTS 52 H/7
Faribault, E. Rodolphe (1860-1953) GSC 1882-1932

Faribault's detailed field work defined geological structures that guided exploration in the gold mining areas of Nova Scotia.

Fletcher Island NTS 52 H/7
Fletcher, Hugh (1848-1909) GSC 1872-1909

Fletcher was an authority on the geology and coal deposits of Nova Scotia. Death from pneumonia, contracted during field work, terminated his long and economically important career.

Geikie Island NTS 52 I/2, 52 H/15
Geikie, Archibald (1835-1924)

Geikie joined the Geological Survey of Great Britain in 1855 and became its director-general in 1882. Various editions of his *Text Book of Geology* and *Outlines of Field Geology* were long-time standards.

Hall Island NTS 52 H/16
Hall, James (1811-1898)

As state paleontologist of New York, Hall determined stratigraphic and paleontological relationships in western New York that were valuable to GSC's work on Canadian continuations of the same rock formations. Before the appointment of Billings, Hall identified fossils, on contract for the GSC, which published some of his studies.

Hitchcock Island NTS 52 H/16, 52 I/1
Hitchcock, Charles H. (1836-1919)

Hitchcock assisted his father, Edward (state geologist of Vermont 1856-1861), on the first geological report and map of Vermont. He compiled a geological map of Maine (1861-1862) and was state geologist of New Hampshire (1868-1878). He collaborated with the GSC on problems of mutual geological interest.

Hoffmann Island NTS 52 I/1,2
Hoffmann, G. Christian (1837-1917) GSC 1872-1907

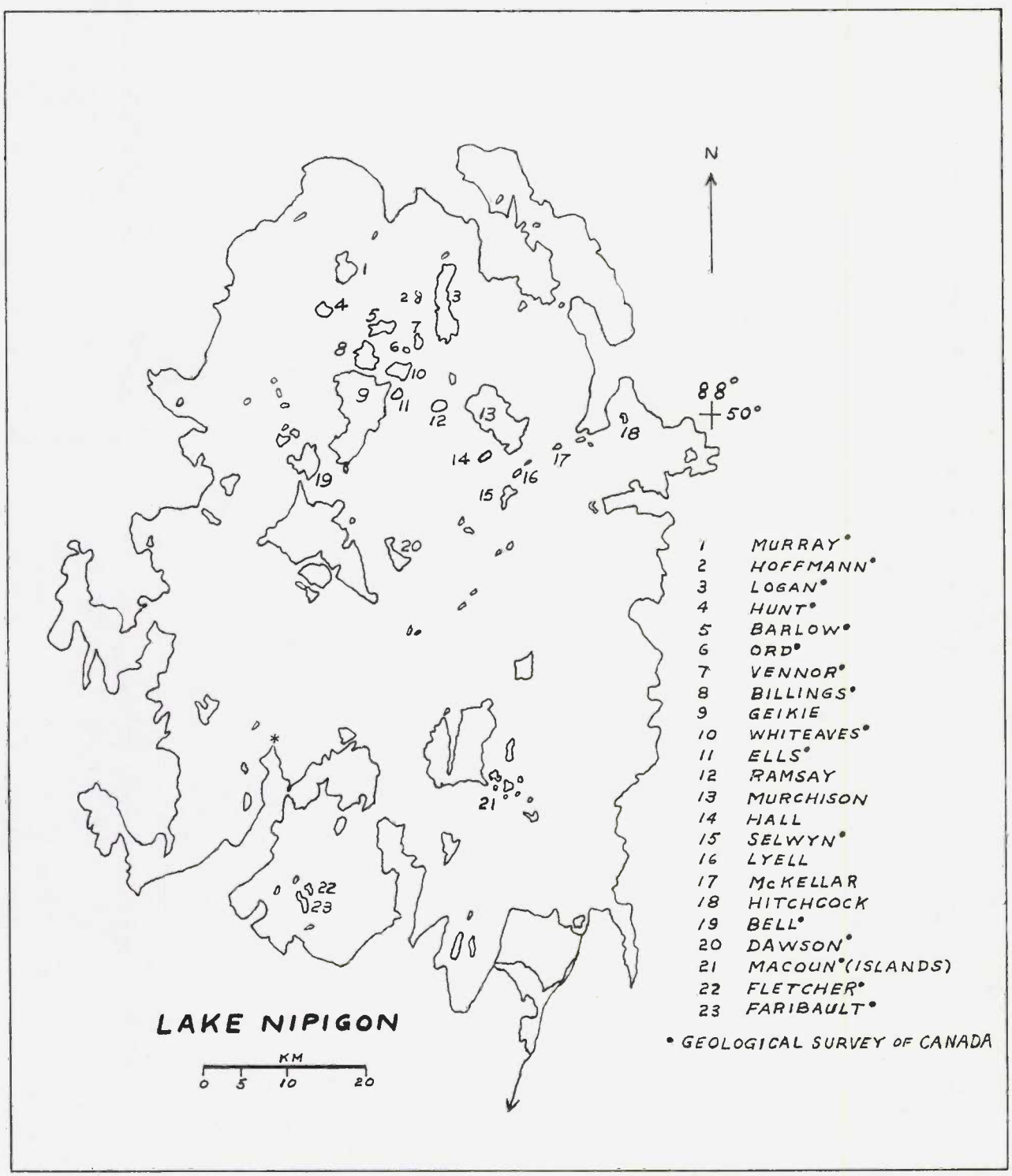
A chemist, Hoffmann became an assistant director of the GSC responsible for chemical and mineralogical analyses of material submitted by GSC staff and the public.

Hunt Island NTS 52 I/2
Hunt, T. Sterry (1826-1892) GSC 1847-1872

Hunt was North America's first geochemist. His studies covered a wide field of chemistry of the earth and he was well ahead of his time in many of his ideas. Almost incidentally he originated the anticlinal theory of oil accumulation that became a standard exploration guide.

Ingall Point NTS 52 H/10
Ingall, Elfric D. (1858-1944) GSC 1883-1928

A mining engineer, Ingall headed GSC's section of mines and later its water and borings section. He reported on mineral



Islands in Lake Nipigon named for members of the Geological Survey of Canada and for other geologists.

Burnt Point (formerly Ingall Point) is indicated by the asterisk.

(Source: G.B. Leech)

resources in the 1880s on silver mines in the Lake Superior region and published statistics on the Canadian mineral industry. Ingall *Point* was changed to **Burnt Point** in 1978.

Logan Island NTS 52 I/1
Logan, William Edmond (1798-1875) GSC 1842-1869

The founding director of the GSC, commonly referred to as the "father of Canadian geology", Logan was born in Montréal, educated there and in Edinburgh. In 1831 he entered the management of a copper smelting and coal mine operation in Wales. That experience kindled his practical interest in geology. His subsequent map of the geological structure of the South Wales coal field and his observations on the origin of coal brought professional recognition that led to his appointment in 1842 to make a geological survey of the Province of Canada. Logan and the small staff of assistants he trained had to make their own base maps as they progressed through roadless, geologically-unknown regions. Despite the odds, they were outstandingly successful in attaining the Survey's objective of providing knowledge leading to the development of a mineral industry and making Canada's resources known abroad. Logan was knighted in 1856 for his scientific achievements and leadership. He retired in 1869 but retained a connection with the GSC until 1874.

Lyell Island NTS 52 H/16
Lyell, Charles (1797-1875)

Scottish geologist Lyell's influential *Principles of Geology*, published in 1830, went through 11 editions in the succeeding 40 years. Lyell made visits to Canada and was alert to the findings of Canadian geologists.

Macoun Islands NTS 52 H/9
Macoun, John (1831-1920) GSC 1882-1920

A botanist and naturalist, Macoun provided information on the agricultural potential of western Canada before and in the early days of railway building there. The biological collections that he and others of the Geological and Natural History Survey of Canada (later the GSC) made were important contributions to its museum, from which the Canadian Museum of Nature and the Canadian Museum of Civilization are direct descendants.

McKellar Island **NTS 52 H/16**
McKellar, Peter (1838-1929)

Peter McKellar and his brother, John, were pioneers of mineral exploration in the Thunder Bay District, Ontario. Peter assisted R. Bell of the GSC in geological explorations in 1869 and 1870. He published a report on mining on the north shore of Lake Superior in 1874 and was associated with mineral exploration in northwestern Ontario in succeeding decades.

Murchison Island NTS 52 H/16, 52 I/1
Murchison, Roderick I. (1792-1871)

Murchison was the first to establish the geological sequence of Early Palaeozoic strata (410-570 million years ago). He served as director-general of the Geological Survey of Great Britain, 1846-1871.

Murray Island NTS 52 I/2
Murray, Alexander (1810-1884) GSC 1842-1864

Logan's first assistant at the beginning of the GSC was Alexander Murray. He had settled in Canada in 1836 following service in the British Navy. After preparatory geological training in England and Wales in 1842-1843, some of it with Logan, he commenced independent work in Canada West in 1843. He played an important role in Canadian geology until 1864, when he undertook the geological survey of Newfoundland. The Murray Fault, a major feature of Ontario geology extending from Sault Ste. Marie to the Sudbury area, which he discovered in 1858, was named for him in 1925.

Ord Island NTS 52 I/2
Ord, Lewis R. (1856-1942) GSC 1876-1881

Ord examined rocks and mineral deposits in the Canadian Shield in the region north of Ottawa and Montréal. He engaged, afterwards (1882-1911), in land and railway surveys, mostly in western Canada, but also in Florida and Argentina. He was instrumental in the formation of the Dominion Land Surveyors' Corps during the Riel Rebellion. Ord's last engagement was with the Ontario Hydro-Electric Commission, 1928-1932.

Ramsay Island NTS 52 I/1
Ramsay, Andrew C. (1814-1891)

Ramsay joined the Geological Survey of Great Britain in 1841 and was its director-general, 1872-1881.

Selwyn Island NTS 52 H/16
Selwyn, Alfred R.C. (1824-1902) GSC 1869-1895

Selwyn was appointed as second director of the GSC, after directing the Geological Survey of Victoria, Australia. He initiated the major programme of scientific exploration of the vast western and northern lands newly added to Canada in 1870 and 1871. This included an appraisal of the economic potential of proposed railway routes to the Pacific coast. An able scientist, Selwyn was less successful in his public relations.

Vennor Island NTS 52 I/2,1
Vennor, Henry G. (1840-1884) GSC 1866-1881

Vennor examined the geology and mineral deposits of Precambrian rocks of eastern Ontario and adjacent parts of Quebec. In private life, he wrote about meteorology and ornithology.

Whiteaves Island NTS 52 I/2
Whiteaves, Joseph F. (1835-1909) GSC 1876-1909

A paleontologist, Whiteaves, an assistant director of the GSC, was in charge of the paleontological work and responsible for its museum.

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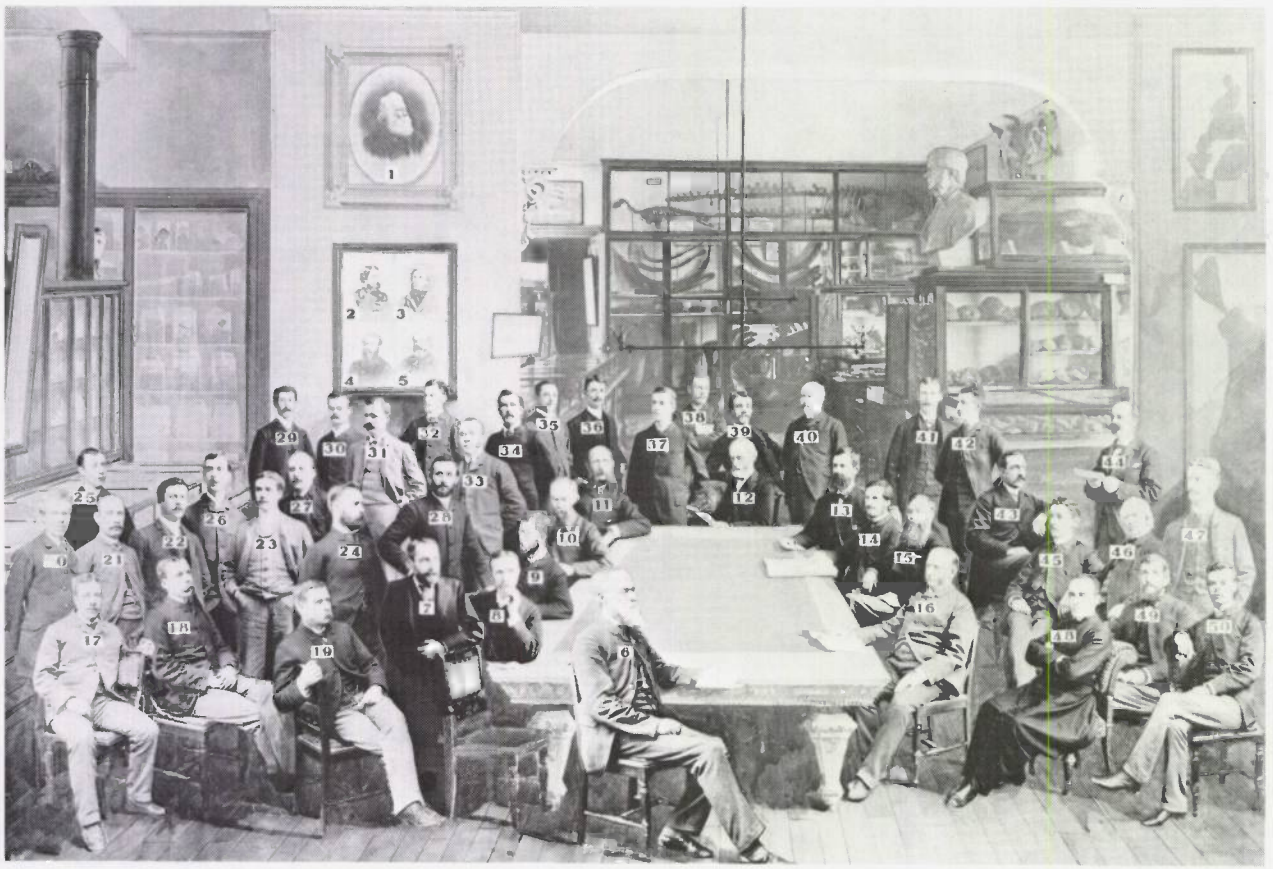

COMPOSITE PHOTOGRAPH OF THE STAFF, 1888

1	**Sir W.E. Logan**	11	T.C. Weston	21	John Marshall	31	**William McInnes**	41	John McMillan
2	**T.S. Hunt**	12	John Thorburn	22	H.P.H. Brumell	32	L.N. Richard	42	R.A.A. Johnston
3	**Elkanah Billings**	13	**Scott Barlow**	23	**L.M. Lambe**	33	H.M. Ami	43	A.S. Cochrane
4	**Alexander Murray**	14	**Hugh Fletcher**	24	C.W. Willimott	34	**James McEvoy**	44	Amos Bowman
5	**James Richardson**	15	**Robert Bell**	25	W.R. McEwan	35	**E.R. Faribault**	45	N.J. Giroux
6	**A.R.C. Selwyn**	16	**J.F. Whiteaves**	26	**James White**	36	J.M. Macoun	46	Michael O'Farrell
7	**G.M. Dawson**	17	**A.P. Low**	27	R.L. Broadbent	37	J.A. Robert	47	**E.D. Ingall**
8	**R.G. McConnell**	18	**F.D. Adams**	28	Eugène Coste	38	W.H.C. Smith	48	J.C.K. Laflamme
9	**J.B. Tyrrell**	19	**R.W. Ells**	29	**D.B. Dowling**	39	**A.E. Barlow**	49	**L.W. Bailey**
10	**John Macoun**	20	Samuel Herring	30	E.G. Kenrick	40	**Robert Chalmers**	50	**A.C. Lawson**

Names in bold type are mentioned in the articles in this issue

(Source: GSC/CGC, GSC 97342)

PLACE NAMING AND THE GEOLOGICAL SURVEY OF NEWFOUNDLAND

W.J. Kirwin and G.M. Story*

The subject of this memoir and place-name note, James P. Howley, was born into an old and distinguished St. John's family, which for some five generations has continuously produced members who have been prominent in the professional and intellectual life of Newfoundland.

The founder of the Newfoundland family was Richard Howley, who arrived from Ireland in 1804, became prominent in business, served at one time as financial secretary of the Colony, and died in 1875 at his residence, Mount Cashel. His sons, four in number, formed the second generation with which we are especially concerned. They included Thomas Howley, the youngest son, a physician trained in Ireland and Scotland, who practiced at Harbour Grace (he also served in the Union Army during the American Civil War); Richard, the eldest, who studied for the priesthood at Rome, was a professor at Dublin, vice-president of St. Bonaventure College in St. John's, and a gifted writer; Michael Francis, the second son, and perhaps the best known of the family: the first native-born bishop of Newfoundland, a distinguished scholar, and a poet and man of letters; and finally, James Patrick Howley, the third son, and our principal subject.

James was born in 1847, and even now it requires only a little imagination to reconstruct the rural Mount Cashel estate where he and his brothers grew up: they were, as Howley observed, "born and reared in the country", well outside a town which was then only beginning to spread slowly beyond sight of the harbour.

What were for others 'rural sports' were his passion: wildlife, its animals, birds, and plants; and endless collections (before the age of twelve) of stones, shells, and the like, catholic though uncoordinated until he read an article on geology in Chambers's *Encyclopaedia* at school-leaving age. This was in 1864, when Alexander Murray (1810-1884) arrived in Newfoundland to undertake, on behalf of the Government of Newfoundland, his geological and topographical surveys of the Island.

* W.J. Kirwin, Professor Emeritus, and G.M. Story, Professor, Department of English, Memorial University, St. John's.

That survey had been a long time coming, and it is perhaps worth recalling that until the early nineteenth century, Europeans, who had been frequenting the coasts of Newfoundland for some centuries, had not often ventured more than a very few miles inland. There were, indeed, excellent reasons for this coastal concentration by a predominantly fishing population in a saltfish export economy. Even after the establishment of year-round settlements, the familiar pattern of life and work was that of summer houses on headland or island for fishing, and winter quarters in the sheltered 'bottoms' of the bays for winter habitation. This seasonal pattern was modified only occasionally by the activities of small numbers of 'furriers' and salmon fishermen who worked, for the most part, the lower reaches of the great river systems.

W.E. Cormack described it all perfectly in 1822 when he walked across the interior, the first European to do so, with his Micmac guide, Sylvester. Cormack's pioneer map of the interior of the Island of Newfoundland was printed in the *Edinburgh Philosophical Journal* in 1824, with brief notes on the expedition, and a record of some interior place names; his full *Narrative* of the expedition did not appear until much later (1856). But twenty years after his journey, and perhaps because of the account of his exploration, the Newfoundland Government engaged the services of a British geologist, J.B. Jukes (1811-1869), to undertake a geological survey of the Island. Jukes published the results in 1843, and the attentive reader will notice that his description of the geological structure of Newfoundland is for the most part confined to what he could observe on the coast. *"The interior"*, Jukes wrote, is *"trackless, uninhabited, and obscured by woods and morasses ... no general knowledge of it exists. No guide can be found who knows more of the country than a few miles round his own dwelling, or a particular path to a neighbouring settlement."*

Jukes might, perhaps, have done better than that, given more time and more persistence — and better (that is, Indian) guides. But it remains true that it was Alexander Murray's arrival in 1864 that was the decisive event in the launching of the systematic exploration and mapping of the interior.

Murray's remarkable career has been described by

Michael Staveley in an essay in the *Newfoundland Quarterly*.[1] Scottish-born, he came to Newfoundland late in his life from work on the great Geological Survey of Canada directed by Sir William Logan; and he was director of the Newfoundland Survey until his retirement to Scotland in 1883. He took on James Howley as his assistant in 1868, and Howley succeeded him as director, an office he held until the second decade of our own century. The documentation of the work accomplished by these two men is to be found in two fundamental works. The first, of course, is in the published forms of their successive *Annual Reports*.[2] The second is in the unpublished form of J.P. Howley's massive manuscript *Reminiscences* of the years 1868 to 1911:[3] more than forty years of a distinguished, interesting, and busy professional and personal life.

The manuscript, or rather annotated typescript, was written in the years leading up to 1911, and it had been long pondered. It was based partly on regular diaries which Howley kept at least from the age of 21; but the loss of a number of these in the Great Fire of St. John's in 1892 makes the work less detailed for some years. He could, however, and did draw upon his professional field notes; he had before him the formal annual reports of the Geological Survey; and he seems also to have kept a record of his various seasonal itineraries. He had an exact and retentive mind; and it had always been his intention – like his brothers, he was a writing Howley – to put his reminiscences into book form.

What is the work like? One of the very best books about the interior of Newfoundland is by an English traveller, artist, and sportsman, J.G. Millais, whose *Newfoundland and Its Untrodden Ways* appeared in 1907. It seems doubtful to us, though, despite the title, if Millais anywhere put a foot, or lit a camp-fire, on much ground where Murray, and certainly Howley, had not been before him. Howley's work is, quite simply, the most detailed account of travel throughout the interior of Newfoundland that has ever been written. It records the first ascent to the headwaters of the Exploits River and Red Indian Lake system (1874), and the descent to Grandy's Brook on the South Coast; to the headwaters of the Humber River system (1879); the south-north crossing of the Island from Bay d'Espoir to Exploits (1888) – following hard on the crossing from Bay du Nord to Bloody Bay in the preceding year; several seasons' work at Grand Lake; and many others.

There is scarcely a significant stretch of country Howley did not explore, map, and describe: river systems such as the Gander, Terra Nova, Humber, Exploits, Harrys Brook, and scores of others. Hills, ranges, stretches of forest land, patches of fertile country, lakes, ponds, frightful bogs, and rolling barrens; and always with familiar compass, micrometer telescope, and transit at hand as the basic topographical mapping of the Island was executed. And with this the geological hammer, specimen bags, and notebooks in one of the first great professional undertakings of the Colony. In a way, we can think of it as paralleling the long-established coastal work which the Royal Navy and its Hydrographic Service were continuing in the tradition of Captain James Cook and his assistant and successor, Lieutenant Michael Lane, in the eighteenth century.

What most interests us, however, in addition to this densely professional documentation, is the equally full picture which Howley depicts of Newfoundland life in the last century: the Micmac guides who were his familiar companions; the people and the ordinary round of life in the scores of settlements visited; the Scottish communities of the frontier West Coast; the new lumber operations on the river systems of the Northeast Coast; the frenzied mining activities in Green Bay and Notre Dame Bay sparked by the Geo*logical Reports*; and eventually, of course, the building of the trans-Island railway. Howley's eye for these sorts of things is as careful, vivid, and exact as his eye for natural features and wilderness scenes. He was, indeed, a recorder of talent – not in the often imaginative line of his writing brothers, but with a naturalist's precision with words – immensely curious about people as well as things, so that the careful editing and annotation of the whole work, to which the authors of this memoir have set their hands, has been a long and challenging enterprise. Not the least interesting aspect of Howley's work is the light it throws on the process of place naming.

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From the earliest times of discovery and settlement, anonymous Europeans imposed names along the Newfoundland coasts, leaving scarcely a record of what motivated their choices. J.P. Howley, though, among other travellers and explorers, has left us a number of details noted at the time of his recording names. Descriptive names like **Crescent Lake**,[4] incident names like *Dead Wolf River "because*

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1 Staveley, Michael (1981): "Saskatchewan-By-The-Sea: The Topographic Work of Alexander Murray in Newfoundland", *Newfoundland Quarterly*, Vol. 77, 2-3, pp. 31-41.

2 Murray, Alexander and Howley, James P. (1881): *Geological Survey of Newfoundland*, Edward Stanford, London.

3 Howley, J.P., *Reminiscences* (1868-1911), typescript owned by David Howley, St. John's.

4 Howley (1878), *Reminiscences*, p. 9.

we found on its banks the skeleton of a large wolf"[5] (now **Dead Wolf Brook**), and commemorative names like "*Sir John Hawley Glover's, or shorter, Glover's Island in honour of the first visit of a Governor to the place*"[6] (now **Glover Island**), and **Jubilee Lake** are among the impositions which have become officially accepted. The diarist specifies the exact day of the last creation: "*August 10th. This being the day set apart for the celebration of the Queen's Jubilee, I have concluded to call this lake Jubilee Lake, Sandy pond being a ridiculous misnomer.*"[7] The name *Linfield's Islands*, "*after the young man who built a schooner here last winter*"[8] (in Salt Pond, Pilley's Island), has not survived on printed maps.

The two topographers of the Geological Survey of Newfoundland in the interior were working in virgin territory, known almost exclusively by Micmac hunters. As they conducted their planned explorations each summer with their Indian assistants,[9] who were bilingual, they noted the names of features, in Micmac or in English equivalents, and these names found their way into field notes, Howley's diaries, the official reports to the government, and the series of maps which eventually covered much of the Island. The invented spellings, often confused and conflicting, in many cases would now require an interpreter or a specialist to provide an authentic pronunciation;[10] away from settled areas, little is known about how the names would be sounded.

Howley writes that he learned some Micmac; his *Reminiscences* quote hymns sung by the natives. Each summer, furthermore, he had ample time to hear place names spoken and learn the translations offered by the guides. In consequence, when writing his geological reports and later his *Reminiscences*, he recorded twenty-two Micmac names. Certain of these were accepted and inscribed by the draughtsman on the maps of Newfoundland, thus forming the basis for the National Topographic Series maps and the most recent *Gazetteer of Canada: Newfoundland*, 1983. This most important group of names – *Annieopsquotch Mountain Range, Eastern Meelpaeg Lake, Kaegudeck Lake, Kepenkeck Pond, Koskaecodde Lake, Lewaseechjeesh Brook, Medonnegonix Lake, (Western) Meelpaeg Lake, Mollychigneck Brook, Mollyguajeck Lake*, and *Pluchiopaeg Pond* – has become established and widely disseminated as **Annieopsquotch Mountains, Eastern Meelpaeg, Kaegudeck Lake, Kepenkeck Lake, Koskaecodde Lake, Lewaseechjeech Brook, Medonnegonix Lake, Meelpaeg Lake, Mollichignick Brook, Mollyguajeck Lake**, and **Pluchiopacg (Cross) Pond**.[11] Other names collected from the guides in wilderness areas are English, and it is presumed that Micmac equivalents lie behind such terms as *(Indian)* **Sitdown Pond, Crooked Lake**, and *Scaffold Hill* (this use of *scaffold* in Newfoundland means 'raised platform for storage of food or game').

A final group of Indian geographical names determined by Howley, perhaps of historical interest only, appears in his writings, but was not adopted when maps were drawn, revised, and reprinted. A cluster appears in the *Survey Report* for 1872 covering the exploration of the Avalon Peninsula: *Nu-cool-minni-guloo Gospen, Taboo-minni-guloo Gospen, Tseist-minni-guloo Gospen, Wagedigulsiboo Gospen, Tusem Gospen, Mestigue-gundaly Gospen.*[12] In addition, scattered Micmac names or phrases can be found in various years of the *Reminiscences*: *Pitpaeg, Pudops Lake, Nibnossewayanjeesh Hill, Geunick Gospen*, and *Quimoo Gospen.*[13]

Further Micmac names[14] appear: in Murray's reports - *Petiwickpegh* [Lake], *Wachtewbeesh Pond, Elnucheibeesh*

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5 Howley (1876), *Reminiscences*, p. 8.

6 Howley (1880), *Reminiscences*, p. 6.

7 Howley (1887), *Reminiscences*, p. 26.

8 Murray and Howley (1881), p. 508.

9 Joe Bernard, John Barrington, Noel Matthews, John Stevens and his son, Peter Stride, Louis John, Nicholas Jeddore, Reuben Lewis, Charlie Francis (an Abenaki), Reuben Souliann, Ben Paul, Joe Brazil, Joe Jeddore, John Ings, Noel Bernard, Joe Jep.

10 Pacifique, Rév. Père (1935): "Gtagamgog – Newfoundland Sag Megoetjiteoagig", in *Études historiques et géographiques*, Ristigouche, Co. Bonaventure, P.Q., pp. 310-21. Pacifique presents the most comprehensive list of Micmac names available, identifications which he obtained from Nicholas Jeddore, himself a guide for Howley during three summers. Most of these names have been further refined by Hewson, John (1978): "Micmac Place Names in Newfoundland", *Regional Language Studies: Newfoundland*, No. 8, pp. 1-21, and (1978): *Kilusuaqaney Wi'katikin; A Newfoundland Micmac Picture Dictionary*, Dept. of Linguistics, Memorial University, St. John's, pp. 21-28.

11 Kepenkeck = eel; koskaecodde = tern; meelpaeg = many lakes in one lake; pluchiopaeg = cross pond (pluchiopacg is actually a bad transcription of pluchiopaeg).

12 Murray and Howley (1881), p. 282; Seary, E.R. (1971): *Place Names of the Avalon Peninsula*, University of Toronto Press, Toronto, pp. 21-26, discusses Micmac names in Newfoundland.

13 Pitpaeg = deep pond; nibnossewayanjeesh = scaffold; geunick = otter; quimoo = loon.

14 Wachtewbeesh = crooked; meta, i.e., miti = aspen.

[Lake]; in Millais - *Lub-despe, Waleje, Souli-an-ek, Brazil-ek, Bad-e-wis-gek, Mem-kus-cowpe, To-mag-on-apse-wagodie, Haglacea-waag, Haliboo-waygodie, Sambadista, Sibook, Minacktu, N'Mooch-waygodie, Podopsk*; on a *Map of Newfoundland* drawn by George E. Turner - **Ahwachanjeesh Pond**, *Ebbengunbaeg Lake*, **Godaleich Pond, Kikupegh Pond**, *Nanedeh Pond* (which has become accepted as **Nanedock Lake**), **Meta Pond**; in the *Gazetteer of Canada: Newfoundland*, 1983 - **Ahwachenjeech Brook**; and in Hewson - *Temeekan Pond*.[15]

[15] Millais, J.G. (1907): *Newfoundland and Its Untrodden Ways*, Longmans, Green and Company, London, p. 338; Turner, George E. (1925): *Map of Newfoundland*, Whitehead Morris Limited, London; and Hewson (1978).

The geological survey conducted by Murray and Howley laid the ground work for the continuing, refined examination of geology in Newfoundland. In addition, though, it was also instrumental in establishing the lay of the land, the cartography of the Island, important in settling mining claims and laying out rational lots or 'sections' of property, especially in the Codroy Valley, and helping to document, and create, the geographical names, French, Micmac, and English, in areas distant from settlements. Howley's many years in the field made a major contribution to each of these pioneering activities.

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DIRECTORS OF THE GEOLOGICAL SURVEY, 1842-1936: RECOGNITION IN THE NAMES OF GEOGRAPHICAL FEATURES

Alan Rayburn*

The Geological Survey of Canada had eight directors from 1842 to 1936. From then to 1950, the Survey was not headed by a director, but was part of the Bureau of Geology and Topography. Its independent status as the Geological Survey with a director was only restored in 1950 with the appointment of Walter Andrew Bell. Each of the directors to 1936 had at least three features named for him, with Logan, Selwyn, and Dawson having more than a dozen each. Except for W.A. Bell (**Mount Bell** in the Yukon), none of the GSC directors of the past half century appears to have had a geographical feature named for him. The paucity of features bearing the names of recent directors is partly due to the present practice of avoiding the names of living persons and partly due to fewer unnamed features requiring identification for scientific purposes.

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Sir William Edmond Logan (1842-1869)

When William Logan and Alexander Murray made a traverse in 1844 across the Péninsule de la Gaspésie [Gaspé Peninsula] from Cap-Chat to the mouth of Rivière Cascapédia, very little was known about the rugged, forbidding landscape encountered during their 125-kilometre journey. After proceeding south for 25 km, they encountered several impressive peaks, one of which Logan climbed and named for himself. The height of **Mont Logan** is 1 135 m, some 130 m lower than Mont Jacques-Cartier, 50 km to the east, and the highest peak in the Monts Chic-Chocs.

Logan was born in 1798 in Montréal, and his professional career, from 1842 to 1869, was based there. It is fitting, therefore, that a street at the north entrance to the Jacques-Cartier Bridge bears his name.

In Abitibi, 155 km northeast of Val-d'Or, there is a township named for Logan.

As a young man growing up in Montréal, George Dawson (GSC's third director) acquired considerable admiration for the head of the GSC. In 1878, while undertaking an evaluation of the coal deposits of the Queen Charlotte Islands, Dawson named 21 land and water features for noted world scientists. For Logan, he named an inlet on the east side of Moresby Island.

In 1887, Dawson made an incredible 2 200-kilometre journey from the mouth of the Stikine River to the Liard River, down the Pelly River to the Yukon River, up that river and over the Coast Mountains to the Pacific port of Dyea. While travelling north on the Frances River, a tributary of the Liard, Dawson named an imposing mountain for Logan. Three years later, Israel Cook Russell of the United States Geological Survey, discovered the highest peak of the St. Elias Mountains, and named it for Logan. At 5 959 m – a joint expedition of the GSC, Geodetic Survey, and the Royal Canadian Geographical Society undertook precise measurements this June (1992) to verify the height[1] -- **Mount Logan** is the highest mountain in Canada, and second only to Mount McKinley in North America.

In 1916, GSC geologist Donaldson Dowling drew the attention of the Geographic Board to the two mountains in the Yukon named for Logan, and proposed renaming the one east of Frances Lake for the noted GSC chemist, Sterry Hunt. He also suggested substituting *Logan Mountains* for *Tootshoo Range*, as shown on Dawson's map. The Board approved *Logan Range*; on the recommendation of GSC geologist Hugh Bostock, the Board altered the name to **Logan Mountains** in 1947.

In the North Channel of Lake Huron there is a bay named for Logan, and adjacent to it is **Logan Island**. There are several islands in Lake Nipigon that were named in 1869 by Robert Bell for famous Canadian and international scientists. One of the larger ones, in the northern part of the lake, is called **Logan Island**.

In 1965, J.D. Godfrey of the Research Council of Alberta, proposed the names of seven prominent Canadian geologists to identify lakes in northeastern Alberta. As well as naming a lake for Logan, he also honoured the following directors: Selwyn, Dawson, Brock, McInnes, and Collins. The seventh geologist honoured was R.W. Ells.

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[1] The most accurate measurement is 5959 m, plus or minus 3 m.

Alfred Richard Cecil Selwyn (1869-1895)

It was during Selwyn's service as director of the GSC that immense areas of Canada's West and Northwest were explored and mapped. It is not surprising, therefore, to find that Selwyn's name was assigned to a large number of geographical features in those areas of Canada.

In 1871, Selwyn investigated the geological and other potential economic features of the proposed North Thompson - Yellowhead Pass railway route. Subsequently, the group of the mountains in the Rockies, west of the pass, was named **Selwyn Range**.

Selwyn explored the headwaters of the Peace River in 1875. Near its junction with the Finlay and the Parsnip, his companion, botanist John Macoun named a 2 420-metre peak **Mount Selwyn**, which they both climbed on July 11.

When Dawson explored the east coast of the the Queen Charlotte Islands in 1878, he gave Selwyn's name to a large inlet separating Louise Island from Moresby Island. In 1957, the Canadian Hydrographic Service named **Selwyn Point** and **Selwyn Rocks** in the area of the inlet.

United States Army Lieutenant Frederick Schwatka explored the Yukon River in 1883. Among the names he gave was **Selwyn River**, to a minor tributary entering the Yukon from the south. At the mouth of the river a small community called **Selwyn** existed from 1900 to the late 1940s, but is now unoccupied. Fifteen kilometres north of Selwyn is **Selwyn Dome**, a 1 570-metre summit named in 1973 by GSC geologist Dirk Tempelman-Kluit, who noted it was used informally during the early days of riverboat travel.

In 1888, William S. Green, a British alpinist and writer, named **Mount Selwyn** and **Mount Dawson** in **Dawson Range** in the Selkirk Mountains, 55 km east of Revelstoke. In 1893, the largest lake on the Saskatchewan-Northwest Territories border was named for Selwyn, probably by Joseph B. Tyrrell.

A major division of the Cordillera in the Yukon is called **Selwyn Mountains**. Named by geologist Joseph Keele in 1901, the Selwyn Mountains extend over 400 km along the Northwest Territories boundary. There are three sections: the Logan, Hess, and Wernecke Mountains. In 1958, a 60-kilometre-long, 12-kilometre-wide, flat valley at the head of Hess River, in the northern part of the Selwyn Mountains, was named **Selwyn Valley**.

Selwyn Island, in the east-central part of Lake Nipigon was named in 1869 by Robert Bell. A township 185 km to the east is named for Selwyn, and **Selwyn River**, flows through the township. **Selwyn Lake** is drained by Selwyn River. **Little Selwyn Creek**, a tributary of Selwyn River, drains Selwyn Lake.

George Mercer Dawson (1895-1901)

In 1878, during his survey of the Queen Charlotte Islands, George Dawson named **Dawson Head** on a small island on the west side of Graham Island, the largest of the Queen Charlottes. During the following 70 years, other scientists and surveyors named eight more features around the Queen Charlottes for the man called the Little Doctor.

Dawson undertook an arduous survey in 1879 from the mouth of the Stikine River to Edmonton. On passing through the Peace River country, he gave the name *Dawson's Brook* to a minor tributary of Pouce Coupé River, which flows north into the Peace at the Alberta-British Columbia boundary. Henry MacLeod, a Canadian Pacific engineer who met Dawson, may have changed the name to **Dawson Creek** which also became the name of a CP station. In 1942, the little village there became Mile "0" of the Alaska Highway. Now an incorporated city, **Dawson Creek** has a population of 11 375.

Dawson Island, **Dawson Channel**, and **Dawson Bay** are in the southern part of the Lake of the Woods. They may have been named by geologist Andrew Lawson, who made a survey of the lake in 1883.

William Ogilvie, a distinguished surveyor and administrator, accompanied Dawson to the Yukon in 1887. The following year, he named a mountain east of Lake Laberge for Dawson. Two years later, Dawson declined the honour, and suggested it be named for Wilfrid Laurier, then the leader of the Liberal Party of Canada. When Ogilvie was asked by Joseph Ladue in 1896 to lay out the site of a town at the junction of the Yukon and Klondike Rivers, Ogilvie said he would do so if he could name it after the finest man he knew. On receiving the news in Ottawa, George Dawson added the name **Dawson City** to his geological map of the Yukon. Ogilvie may also have named **Dawson Range**, a chain of mountains southwest of the Yukon River.

Dawson Peaks are five summits of a mountain, 60 km northeast of Atlin, B.C. The name may have been given for George Dawson by Arthur St-Cyr, who surveyed the British Columbia-Yukon boundary in 1899 and 1900.

In 1889, Joseph B. Tyrrell gave the name **Dawson Bay** to the northwesterly extremity of Lake Winnipegosis in Manitoba. **Dawson Bay** is also a little community on the west side of the bay. About 1893, Tyrrell named **Dawson Inlet** on the west coast of Hudson Bay, 85 km northeast of Arviat.

Dawson Island in Lake Nipigon may have been named about 1894 by William McInnis and Donaldson Dowling. In 1899, William Ganong named **Mount Dawson** in north-central New Brunswick for the GSC director.

Robert Bell (Acting, 1901-1906)

During his impressive career of geological field work from 1869 to 1899 in Quebec, Ontario, and the North, Robert Bell is reputed to have named at least 3 000 geographical features. It is difficult, however, to pin down all the geographical features actually named for him.

The eastern extremity of Southampton Island, was named *Bell Island* by Captain A.R. Gordon, who commanded an expedition that surveyed the coasts of Hudson Bay and Hudson Strait. in 1884-1885. Bell accompanied the expedition as geologist, photographer, taxidermist, and physician. When the feature was found in the 1930s to be part of Southampton Island, its name was changed to **Bell Peninsula**.

Bell undertook extensive surveys in 1896 in the James Bay watershed. **Rivière Bell** is a 200-kilometre-long river that rises in Lac Tiblemont, east of Val-d'Or, and flows north through Senneterre to empty into Lac Matagami. **Mont Bell**, at Senneterre, 50 km northeast of Val-d'Or, is also named for him.

Robert Bell is among several distinguished scientists who has an island in Lake Nipigon named for him. **Bell Township** is in Thunder Bay District, adjacent to **Low Township** and **Selwyn Township**.

Albert Peter Low (1906-1907)

In 1885 and 1886, A.P. Low undertook extensive geological surveys in the area of Lac Mistassini and Rivière Rupert, Quebec. From 1892 to 1899, he carried out surveys in the area of the present Quebec-Labrador border, and along the shores of Hudson Strait. In 1903-1904, he led the expedition that took possession of the *Canadian Arctic Archipelago*.

In 1931, the Canadian Hydrographic Service named **Mont Albert-Low** in the far north of the province. It is adjacent to Fisher Bay, an arm of Hudson Strait. A large lake, 140 km northeast of the mouth of Rivière Eastmain, was named for him in 1952. Another lake, 280 km southeast of Kuujjuaq, is also named for him.

Cape Low, the most southerly point of Southampton Island, was named about 1907-1910 by Captain George Comer. **Low Island** in Milne Inlet adjacent to Baffin Island, was also named during the same period. During a 1913-1917 expedition, American geographer Elmer Ekblaw named **Mount Low**, in west-central Ellesmere Island. In 1957, the Canadian Hydrographic Service named **Low Islands** on the west side of Ungava Bay to commemorate Low's 1897 exploration of the area.

Low Island, in Ontario's Thunder Bay District, is south of **Selwyn Township**, west of **Bell Township**. **Lowbell Lake** takes its name from the two townships - Low and Bell - it is located in. A creek nearby also bears the name Lowbell.

Mount Low on the Alberta-British Columbia boundary, 200 km northwest of Calgary, was proposed in 1920 by British Columbia's Boundary Commissioner, Arthur O. Wheeler.

Reginald Walter Brock (1907-1914)

In Port Louis, on the west side of the Queen Charlotte Islands, is a group of small islands called **Brock Islands**. The name was given during a 1913-14 geological survey by James D. MacKenzie. In 1921, F.H. McLearn named *Brock Bay* and *Brock Point* on the north end of Moresby Island.

In 1917, explorer Vilhjalmur Stefansson, while leading the Canadian Arctic Expedition, discovered several large islands in the *Canadian Arctic Archipelago*. One of them he named for Reginald Brock, then Dean of Applied Science at the University of British Columbia.

Brock River is an 80-kilometre-long river flowing west into Darnley Bay, an arm of the Arctic's Amundsen Gulf. The river was named in 1920 by zoologist R.M. Anderson. **Brock Lagoon** is on the north side of the river's wide delta.

Mount Brock, east of Telegraph Creek in northwestern British Columbia, may have been named earlier this century for Reginald Brock.

William McInnes (1914-1920)

A native of Fredericton, N.B., William McInnes undertook field studies in his native province and in northern Ontario.

About 1902, **Mount McInnes** in north-central New Brunswick was named by William Ganong. It was not endorsed for use on provincial and federal maps until 1969.

McInnes Lake in northwestern Ontario, 120 km north of Red Lake, was named in 1939 for William McInnes. The lake is drained to the north by **McInnes River**, a tributary of the Severn.

William Henry Collins (1920-1936)

In 1906-1907, William Collins explored the area west of Lake Nipigon. A Canadian National station, 200 km north of Thunder Bay, is named for him. The adjacent lake, first known as *Trout Lake*, was renamed **Collins Lake** in 1928.

Mont Collins, two kilometres west of Mont Logan in the Péninsule de la Gaspésie, is named for this GSC director. It may have been given by F.J. Alcock, who surveyed the area in the late 1920s.

As noted in the section on William Logan, **Collins Lake** in northeastern Alberta was named in 1965 by J.D. Godfrey of the Research Council of Alberta.

Conclusion

During the past 150 years, the Geological Survey of Canada has been led by a distinguished group of scientists and scholars who have made significant and valuable contributions to the mapping and measuring of the mineral resources of Canada. The eight directors from 1842 to 1936 - Logan, Selwyn, Dawson, Bell, Low, Brock, McInnes, and Collins - mapped and named thousands of geographical features from Labrador to the Yukon and from Ontario to the *Canadian Arctic Archipelago*. It is fitting that their work on behalf of the people and the Government of Canada is reflected in the names of townships, mountains, islands, lakes, and a variety of other geographical features.

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The writer acknowledges the valuable remarks and corrections of Geoffrey B. Leech, a geologist retired from GSC.

THE NAMING OF UNDERSEA FEATURES BY OFFICERS OF THE GEOLOGICAL SURVEY OF CANADA

B.R. Pelletier*

Introduction

This article is based on the descriptive accounts, records, and notes by Geological Survey officers, as summarized in the minutes, files, and computer printouts of the Advisory Committee on Names for Undersea and Maritime Features (ACNUMF). The field work has involved the use of sounding leads, sonic and seismic recorders, visual observations of the seabed with the use of scuba, submersibles, cameras and television, and long study of existing hydrographic charts and records.

In this article, a broad definition of Geological Survey membership is utilized. Many geoscientists served in other branches of government early in their careers, but have become members of the Survey by reasons of transfer, departmental change, or as new employees. Their introduction to naming and categorizing undersea features generally commenced with their own field work in a variety of activities. Some of these are: oceanographic cruises in domestic and foreign waters aboard government scientific ships, federal icebreakers, charter vessels, and small craft; occupation of sampling stations on Arctic ice platforms by means of ship-based or land-based aircraft; operations from major base camps on the ice canopy of the Arctic Ocean on such expeditions as LOREX (Lomonosov Ridge Experiment), CESAR (Canadian Expedition to Study the Alpha Ridge), and HOBSON'S CHOICE (Ice Island Experiment)[1] and submersible operations for sampling and observing the seafloor of the three oceans around Canada, in the major inlets and bays and in the channels of the *Canadian Arctic Archipelago*.

The move toward international areas is exemplified in the proposal and recognition of **Canada Basin** in the southern Arctic Ocean in 1978-1979, in the naming of the seamounts in the Atlantic Ocean earlier by B.D. Loncarevic and in the Pacific Ocean subsequently by D.L. Tiffin and colleagues. Other international activities will continue and will be driven by scientific enquiry, hydrographic demands, jurisdictional disputes, claims in the economic zone involving minerals and fisheries, and the implications of the Law of the Sea. In all such actions, the Committee will be involved and the supporting role of Survey officers will be substantial.

Marine Research and Survey

During the 1960s, geoscientists and hydrographers of the Canadian government undertook cruises into arctic waters, Hudson Bay and its approaches, and the North Atlantic in order to study seafloor morphology and the structure of the earth beneath. The open sea lends itself to research and survey and to the rapid gathering of large amounts of data. This work can be carried out routinely and at an even pace, but in the ice-covered waters occurring in the western Arctic, progress can be diverted, impeded, or halted altogether.

Activity over the sea ice was centred around the Polar Continental Shelf Project (PCSP) and, in many cases, it still is. Here the work was slow and arduous because holes through the ice were broken or drilled in order to lower sampling tools and sounding leads to the seafloor. Depths from a few metres in shallow water to those exceeding 1 000 m in the Arctic Ocean had to be reached. Transportation to these sampling sites was carried out by means of helicopters, aeroplanes, tracked vehicles, and, on one field party, dog teams. Radio positioning using the Decca navigator was used throughout all operations - even on the dog sled. Subsequently, sonic devices were devised to operate through ice, which greatly increased information on the seafloor morphology. Soon distinguishable features such as valleys and ridges, continental shelves and slopes, drowned headlands and watersheds were revealed as the bathymetric charts began to take shape. Meanwhile in the eastern Arctic, icebreakers were used to survey the seafloor in ice-navigable waters. Surveying in these channels and bays had been ongoing since the voyages of discovery nearly four centuries earlier, but was intensified with the advent of the icebreaker in the mid-1950s and thereafter.

It was during the early years of the PCSP that Geological

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1 This was an ice island, adrift in the Arctic Ocean, west of the Queen Elizabeth Islands.

Survey officers[2] worked annually on marine geology problems in the waters of the High Arctic. They utilized the icebreakers of Transport Canada and the facilities afforded by PCSP. Based on the hydrographic and geological work carried out on this programme up to the mid-1960s, Pelletier described several major features of the seafloor. He deduced that an ancient fluvial trunk system, lying beneath the *Archipelago* channels and following geological structures in its geomorphic development, was later modified by glaciation. Relative to the land, submersion had taken place and was followed by uplift later. More bathymetric evidence suggests that this process is still underway in the central portion of the *Archipelago*, although some relative subsidence of the islands is taking place in the extreme east and west.

At the time of discovery (1960s), most of the undersea features were without names or designations. Twenty years later, B.V. Sanford and B.R. Pelletier submitted names for the undersea valleys and troughs. Names such as **Lincoln Valley** and **Thule Valley** are examples of those features in the vicinity of Nares Strait, and **Peary Trough** and **Gustaf Adolf Trough** are two of many undersea features in the western part of the Queen Elizabeth Islands. The Arctic continental shelf adjacent to these islands was named **Queen Elizabeth Shelf** by Sanford and Pelletier and those morphological features lying immediately seaward were called the **Queen Elizabeth Slope** and **Queen Elizabeth Rise**.

While work in the Arctic was underway, a major oceanographic/hydrographic cruise into Hudson Bay took place in 1961 in the chartered vessel MV *Theta*. Five officers of the Geological Survey,[3] carried out marine geological and geophysical studies of the seabed, with hydrographer John Butters plotting the soundings. The general shape of the basin was revealed, as well as a central shoal and ridge to be named **Midbay Shoal** and *Midbay Ridge*, respectively, by B.V. Sanford a few years later. In 1965, both CSS *Hudson* and the charter vessel MV *Theron* carried out a multi-disciplinary survey in Hudson Bay with hydrographer Milton Hemphill and several Geological Survey officers[4] aboard. From the bathymetric map drawn after the cruise, Pelletier described a submerged, radial drainage pattern that originated from various trunk systems around the bay. Numerous valleys, ridges, and shoals appeared; their origins were confidently confirmed from an examination of the geophysical records and the sediment samples obtained from the seafloor. One feature discovered from MV *Theron* was revealed as a steep-walled trough formed in bedrock - the deepest feature in the bay. It was first called the *Theron Deep* by A.G. Goodacre and B.R. Pelletier, but later was given the more appropriate name **Winisk Trough** by B.V. Sanford.

In the North Atlantic, major initiatives in the earth sciences had commenced with new working hypotheses on the structure of the earth and its continual evolution. Although the concept of plate tectonics arrived firmly in the 1950s with marine geophysical cruises taking place over the **Mid-Atlantic Ridge**, it was in the middle of the 1960s that such cruises from the newly established Bedford Institute of Oceanography (BIO) in Dartmouth, N.S., were dedicated to the studies of plate tectonics and seafloor spreading. Foremost, were those led by B.D. Loncarevic, then of the Marine Sciences Branch (EMR) and, later, the first director of the Atlantic Geoscience Centre. A Canadian Hydrographic Service (CHS) surveyor, G.R. Douglas, was aboard in order to handle the hydrographic requirements of the project. Over the Mid-Atlantic Ridge between latitudes 45° and 46° North, Loncarevic discovered and dredged numerous basaltic peaks lying about two kilometres below sea level. During these years he gave names such as: *Confederation Peak*, after Canada's centennial; *Kettle Seamount*, after Captain Walter Kettle, the first master of CSS *Hudson*; *Vieau Seamount*, after the second master of CSS *Hudson*; *Wegener Seamount*, after the famous proponent of the continental drift theory; and many others.

Two other crossings over the Mid-Atlantic Ridge took place on an oceanographic cruise to Lisbon in 1969 by B.R. Pelletier. Part of the cruise objectives involved geophysical surveying under the direction of B.D. Loncarevic, and drilling of the basaltic seamounts by BIO's engineer John Brooke, with C.T. Schafer serving as the geological consultant. During the course of the drilling, several seamounts were named by Pelletier and, at that time, were entered in the ship's logs. These mountains are called *Olympus*, *Hermes*, and *Mercury* with direct reference to Greek mythology so that they could be recognized as the group of seamounts drilled by Brooke that year for Loncarevic and Schafer. In November of 1969, CSS *Hudson* began her famous cruise around the Americas and opened new areas of seabed studies in the Pacific and Arctic Oceans.

One of the most momentous discoveries of seafloor morphology by CSS *Hudson* on this cruise was the occurrence of a deep trench alongside a pronounced peak located in the South Pacific Ocean. These features were dubbed *Hudson Deep* and *Hudson Peak*, respectively, by R.T. Haworth who was undertaking a geophysical survey over the Pacific Ocean along the ship's tracks. From the records, Hudson Deep is

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2 Such as A.C. Grant, J.I. Marlowe, G. Vilks, and B.R. Pelletier.

3 M.J. Berry, P.J. Hood, A.K. Goodacre, R.J. Leslie, and B.R. Pelletier.

4 These included M.J. Berry, R.V. Cooper, A.K. Goodacre, A.C. Grant, G.D. Hobson, C.E. Keen, M.J. Keen, P.G. Killeen, B.D. Loncarevic, H.A. MacAuley, K.S. Manchester, B.R. Pelletier, F.J.E. Wagner, and R.J. Weber.

greater than 6 103 m deep, while the summit of Hudson Peak is 2 920 m below sea level. This spectacular change in elevation of approximately 3 200 m occurs across an apparent horizontal distance of 50 km, although the width of the trench is probably less than half that distance.

While CSS *Hudson* was steaming northward, and later operating off the western coasts of the United States and Canada, additional tectonic features were discovered and named. Many of these features are actually ridges and seamounts comprising solid bedrock so, in essence, the seafloor morphology is actually the bedrock topography. Later these names were submitted by D.L. Tiffin of the Pacific Geoscience Centre (PGC), but the ongoing work on CSS *Hudson* and numerous other vessels was undertaken by Geological Survey officers.[5] The names of undersea features that were observed during these voyages in the 1970s reflected the areas of ongoing tectonic studies of the seabed: **Juan de Fuca Ridge**, Juan de Fuca plate, **Winona Basin**, **Endeavour Trough**, **Explorer Ridge**, **Dellwood Knolls**, and many others. One of the most famous names is **Tuzo Wilson Seamounts**, named after J. Tuzo Wilson who is a founder of plate tectonic theory and so-called hot-spot convection models. It is the only subsea feature named by Canadian scientists after a living geoscientist in Canada, based on his illustrious performance and world-wide renown.

Continuing her cruise into the Arctic Ocean in the summer of 1970, CSS *Hudson* commenced a geoscience/oceanographic survey of the Beaufort Shelf and the seabed adjacent to Canada Basin. She accompanied CSS *Richardson*, CSS *Parizeau*, and CSS *Baffin* who were already undertaking a massive hydrographic survey in response to charting needs by the petroleum industry. These private companies had already made significant discoveries of oil and potential oil-bearing structures in the region in recent years, and were destined for continued exploration and development of these resources. The scientific/hydrographic flotilla, driven by these needs, soon made a twin discovery that would have a profound effect on economic exploration in the area. The so-called pingos and ice scours occurring on the seafloor had been recorded, by means of continuous seismic profiling in combination with conventional echo-sounding and the innovative side-scan surveying, over the entire area of occurence on the Beaufort Shelf.

To review the pingo discovery properly, it is necessary to refer to the first voyage of a commercial vessel through the Northwest Passage. This historic journey was undertaken in 1969 by the USS *Manhattan*, a super-tanker of some 125 000 tons, which was ice-strengthened for the passage through normal sea ice and pressure ridges. She was accompanied by *Sir John A. Macdonald*, a Canadian Coast Guard icebreaker, with observers and consultants aboard. While in the southern Beaufort Sea, the echo-sounder suddenly revealed a spike-like feature that arose abruptly from the seafloor and declined as quickly. Hydrographer Ken Williams called Admiral A.H.E. Storrs of Transport Canada to observe the feature. The admiral rushed over saying: "Where?" and then: "You mean that?" as he poked his finger at the sounder and bent the stylus. A few years later the name **Admirals Finger** was recommended for approval by the Advisory Committee for the pingo located at 70° 40' 07" and 132° 25' 11", although the original pingo has not yet been named. The Committee felt that the feature, which may be ice-cored, is a navigational hazard and, therefore, a warning to mariners would thus be issued by naming a nearby feature; it was also a memorable way of commemorating a nostalgic, if not spectacular, event - amongst friends, that is.

These pingos were described by hydrographer T.B. Smith and Survey officers R. Macnab, J.M. Shearer, and B.R. Pelletier. These features are approximately 400 m in diameter, are conical in profile, and rise about 30-50 m from their base; also, they may rise within 12 to 15 m of the sea surface in their shallowest occurrences. True pingos are characterized by a core of ice, and this was demonstrated for the undersea pingos by means of a high-resolution seismic profile over the feature. Other mounds were also discovered that year, particularly where they occur over the continental shelf/slope break and **Mackenzie Trough**. These were called pingo-like features (PLFs) and are essentially mud volcanoes. They are smaller, more plug-like in profile and occur along shallow fault lines and in offshore areas of seafloor instability. However, the pingos may occur in clusters. Several clusters later received group names, such as **Kugmallit Pingos** and **Pullen Pingos**, from the names of nearby geographical features.

The ice scours, which are linear grooves on the seabed, were originally described by J.M. Shearer and B.R. Pelletier; subsequently, other Survey officers (such as S.M. Blasco and C.F.M. Lewis) have contributed considerably to these descriptions from their own cruise work into the Arctic Ocean. Whereas the pingos are a hazard to navigation, the ice scours are a formidable problem to the development of known natural resources in the Beaufort Sea. The scour marks were identified on the echo-sounder and side-scan sonar, and were mapped in their thousands over the entire area. They are long linear grooves which may be several metres deep in the seabed, particularly in soft mud, and may occur as single tracks or as multiple parallel grooves. Their widths vary from a few metres to several tens of metres and their lengths may be several hundred metres up to a few kilometres. Because they are formed by drifting ice scraping the seabed and may be intersected more than once by additional ice keel action, the threat of their existence to seabed installations and pipe-

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[5] D.I. Ross, S. Srivastava, C.E. Keen, R.T. Haworth, D.L. Tiffin, C.J. Yorath, B.D. Bornhold, R. Currie and others. Workers from the University of British Columbia included R.T. Chase, J.W. Murray, and S.M. Barr.

line crossings is apparent. No names have been given to these features except the generic - ice scours.

A variety of other undersea morphological features was revealed from sonic and seismic surveys during the HUDSON 70 cruise in the Beaufort Sea. Ancient river valleys, whose mouths were submerged more than 10 000 years ago, were revealed on sonic and seismic records and named by Pelletier more than a decade after the cruise. These valleys now bear names such as: **Mackenzie Trough**, **Kugmallit Valley**, and **Niglik Valley**. They all transect the shelf in virtually parallel courses. Submerged islands or offshore bars were also named; for example, the **Liverpool Bars** on the eastern part of the Beaufort Shelf which lie in a few metres of water only. **Beaufort Shelf**, **Beaufort Slope**, and **Beaufort Rise** are three additional major features named and published in the *Gazetteer of Undersea Feature Names 1987*.

Offshore oil exploration, which was proceeding over all continental shelves around Canada during the 1970s, introduced new participants in underwater studies. Drilling of wells off the eastern seaboard of Canada invoked the need for additional charting and subsequent naming of prominent undersea features. Science, hydrography, and exploration were increasing, as manifested in a new series of natural resources maps involving simultaneous hydrographic and geophysical surveying, together with navigational plotting. Engendered on the geophysical side by B.D. Loncarevic and on the hydrographic side by H. Blandford, these maps were designed to suit the needs of exploration, science, and transportation. This type of mapping programme was extended from the Bay of Fundy in the mid-1960s to the Atlantic, Arctic, and Pacific seaboards of Canada well into the 1970s.

From these maps, additional naming of undersea features took place in the Canadian offshore; in part, they were supplemented by a new geoscience series of maps and reports introduced by the Marine Sciences Branch. In this series, workers[6] were investigating other morphological features of the seabed along the Atlantic seaboard. They were also mapping the quality of the seabed, in terms of roughness, as an aid to fishermen. Drapeau was working on huge sand waves on the southeastern **Scotian Shelf** which have yet to be named, although their origin is known. King and his associates discovered the so-called, gas-produced pock marks on the Scotian Shelf and these too, are unnamed. Generally, in the practice of naming undersea features, it is the generics that pose the difficulties; however, in the case of the sand waves and pock marks, it is the proper names, the specifics, that have yet to be addressed - probably because of the profusion of these features.

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6 Such as L.H. King, G.B. Fader, B. MacLean, and G. Drapeau.

During this period, investigations of undersea features for the purpose of scientific enquiry were carried on extensively in Atlantic waters. The research on seamounts received impetus from the proposed deep-sea drilling of these features by a consortium of American oceanographic institutes. One of the seamounts selected for drilling lay in deep water just north of the northeastern portion of the **Newfoundland Shelf**. In March of 1970, Alan Ruffman of Dalhousie University, a contract employee of the Geophysical Section at BIO, named this feature **Orphan Knoll**. But, it was also called *Lilly Knoll* or *Lilly Seamount* by A.C. Grant in memory of Professor Hugh Lilly of Memorial University, St. John's, who had died in a car accident four years previously. Neither scientist knew of the other's proposal; however, when the problem of double naming arose, Grant acceded to the Advisory Committee's suggestion to follow the proposal by Ruffman. Because the seamount in question appeared to be a remnant of the North American tectonic plate that had been left behind, as it were, during the process of continental drift, it appeared to Ruffman that it had become an orphan. Thus, the name Orphan Knoll was introduced to the scientific literature and popular press alike - and it stuck.

To round out the account of a Hugh Lilly memorial, another feature of the Newfoundland Shelf that lay closer to home was selected by the Committee and duly named **Lilly Canyon**. Grant had proposed *Sackville Knoll* as an alternate name for Orphan Knoll, prior to the Committee's recommendation, and to commemorate CSS *Sackville*'s earlier surveys of the feature. However, BIO scientists scrutinized all documentation in response to a request by the Committee, and fully endorsed the name Orphan Knoll. The CSS *Sackville* was later honoured when another feature on the Newfoundland Shelf was named **Sackville Spur**. Grant's efforts at naming undersea features were rewarded in time. His research on the Labrador Shelf resulted in the discovery of the **Labrador Marginal Trough**, dating from an original seismic traverse in CSS *Hudson's* launch in 1965 while the hydrographers flew ashore by helicopter to maintain a tidal gauge at Nain, Labrador. Grant set the equipment in operation and, with Pelletier as his companion watchkeeper, recorded the occurrence of the trough at the onlapping contact of younger sedimentary rocks overlying an ancient basement of crystalline bedrock. This is the largest morphological body identified on the Labrador Shelf, and is comparable in size, shape, and origin to other marginal troughs on glaciated continental shelves around the world. Grant also named other undersea features in the area, such as **Hopedale Saddle**, **Okak Bank**, **Harrison Bank**, and **Makkovik Bank**, after nearby geographical features.

Following a submersible operation by C.F.M. Lewis and B.V. Sanford in Hudson Bay during the summer of 1971, several undersea features were named by Sanford. These names were recommended by the Advisory Committee in 1973, and included **Hudson Basin**, **Kendall Ridge**, **Churchill**

Ridge, and **Button Channel** after local geographical features. Undersea features in Ungava Bay, Hudson Strait, and Foxe Basin were also included on the list. At this time Sanford was preparing a series of geological and physiographic maps of eastern Canada which included all the adjacent offshore areas. This wide regional approach was necessary because these maps combined the geology offshore and onshore. With increased activity in drilling and oil exploration offshore, it was essential to have the undersea features named so that suitable references for ensuing reports and maps could be utilized. Sanford submitted other names: **Southeast Baffin Shelf** and **Davis Sill** in the Baffin Bay area; **Hamilton Spur** on the Labrador Shelf; and *Bayfield Ridge*, *East Anticosti Ridge* and *West Anticosti Ridge*[7] in the Gulf of St. Lawrence.

Meanwhile a splendid cooperative research programme was underway between geoscientists at Dalhousie University and their colleagues across Halifax Harbour at the Atlantic Geoscience Centre (AGC) in BIO.[8] The work was centred around the seamounts known as the **Newfoundland Seamounts**, lying south of The Grand Banks of Newfoundland. Every day was a conference at sea in that scientists and technicians consulted each other and the deck crew and bridge officers; the results of the survey and operations were critiqued; and the types of undersea features were discussed from the standpoints of origin and nomenclature. A camaraderie existed that emanated from the commonality of life at sea, the objectives of the project, the elation of discovery, and the satisfaction of seeing a job well done. Obvious good humour and hard work prevailed on this programme, and was reflected in the naming of five seamounts: **Screech Seamount**, after a popular beverage enjoyed by the people of Newfoundland; **Scruncheon Seamount**, after a dish popular in Newfoundland; **Dipper Seamount**, after a local food, but sometimes referred to as a utensil for dipping into beverages; **Touten Seamount**, after a local food of Newfoundland sometimes called hardtack; and **Shredder Seamount**, after a series of dredging incidents. At first the Committee baulked at these names, but in a spate of impassioned correspondence Kathy Sullivan and Charlotte Keen were able to persuade the Committee to adopt their views. For example, they wrote in March 3, 1976, " ... *the first four names are lighthearted and are a tribute to the joyful nature of the people of Newfoundland and the colour of daily life in this province. We feel this is an appropriate theme for the names of the Newfoundland Seamounts.*"

With regard to the name Shredder Seamount, this was a somewhat ominous matter and one that captures the arduous nature of work at sea. Our submitters, Sullivan and Keen wrote about Shredder: "... *a name which reflects the great effort expended in the pioneering studies of the seamounts ... three large rock dredges were literally torn to shreds during the exhausting 48 hours HUDSON spent on station. We eventually succeeded in obtaining what have proved to be tremendously important in situ samples, much to the joy and relief of the entire ship's company. Officers, crew and scientists unanimously dubbed the mountain "Shredder" in view of the damage done to our equipment. We see no reason why this spontaneous expression of the joy of hard-won success should not be allowed to stand. Our colleagues in marine science around the world would certainly appreciate the history and sentiment behind the name.*" (Author's note: Amen to that!)

In the Pacific Ocean, work that began in the late 1960s and early 1970s was ongoing through to the 1980s, and included undersea morphology. The undersea topography along the western continental margin is marked with precipitous slopes, magnificent canyons, and sudden changes in relief. Such morphology is conducive to submarine landslides and dislocation of the seabed itself. From an engineering standpoint, these features had to be investigated as potential hazards to pipelines and cables crossing the seafloor; even seabed installations, however firmly anchored, could be subjected to disastrous accidents. Consequently, it was necessary to name many of the more important features that were investigated and described for reference purposes in ensuing reports and papers, for example, **Pisces Canyon**, **Queen Charlotte Fan**, **Haida Channel**, **Kyuquot Canyon**, and many others. In many cases, the submarine fans exemplify the remarkable and indisputable evidence of recent slumping and mass sediment transport and, therefore, should be named as beacons warning of instability.

As interest in oil and gas exploration waned due to the ongoing federal moratorium on offshore drilling in the area, the long-standing scientific interest in submarine plate tectonics increased. Geologists and geophysicists[9] were discovering new mechanisms and motions of these gigantic crustal features, and making observations of their relationship

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7 East Anticosti Ridge and West Anticosti Ridge are unapproved alternate names for **Anticosti Platform**.

8 The workers from Dalhousie included R. Hyndman (present director, PGC), K.D. Sullivan (later an American astronaut), and J.A. Hall (presently on staff, Dalhousie); from AGC they included C.E. Keen and D.L. Barrett, both Survey officers.

9 Members of the research teams at various times included several Survey officers: B.D. Bornhold, R.G. Currie, R. Hyndman, R. Macdonald, R.P. Riddihough, D.L. Tiffin, and C.J. Yorath. They were commonly joined by R.T. Chase and J.W. Murray of the University of British Columbia.

to volcanoes and earthquakes. These workers singly, or in combination, named a variety of newly discovered undersea features. Names such as *Middle Trough*,[10] **Dixon Trough**, and **Brown Seamount** began appearing before the Advisory Committee for recommendation and approval.

Impetus on research and exploration of subsea features in the Pacific Ocean was additionally fuelled from the discovery of the hot plumes, or the so-called black smokers. These are underwater thermal exhalations of metallic sulphides, other metals, gases, and steam that emanate at several hundred degrees Celsius from vents in the seafloor, and are located in troughs near, or at, spreading centres of the major tectonic plates. The 1980s were partly devoted to the investigation of these vents and their associated sedimentation and mineralization. International expeditions, employing submersibles and the *Joides Resolution* deep-sea drilling ship, and National Oceanic and Atmospheric Administration scientists moved into the Juan de Fuca Ridge and *Juan de Fuca Trough* region to investigate the phenomena. A variety of geochemical and geophysical techniques was used to obtain data and samples. Many Survey officers,[11] over the years, took part in some or several aspects of these surveys. Although these officers are using the names of undersea features recently submitted by their colleagues, they are attempting to name and categorize the hydrothermal vents into groups that will, presumably, bear proper names (specifics) similar to the large topographic features around them.

The 1980s were also important for Geological Survey officers carrying out research and survey in Arctic waters, particularly in the ice-infested regions of the central Arctic Basin. Ventures were carried out from major base camps near the North Pole (LOREX), and again on the ice canopy over the **Alpha Ridge** (CESAR), and finally from the so-called Canadian Ice Island, off the Queen Elizabeth Islands (also referred to by the name HOBSON'S CHOICE - after Thomas Hobson, English innkeeper of the 17th century who operated on a "take-it-or-leave it" basis, but also in tribute to George Hobson who was director of PCSP at the time, and unrelated to the innkeeper). New names began to appear: **Chukchi Borderland**, which was the name submitted by J.R. Weber for a large plateau-like feature due north of Chukchi Sea and forming the western border of Canada Basin; and **Cesar Trough**, also named by Weber when the camp drifted across the trough in 1983.

Most undersea features named by Survey officers had been described between 1960 and 1985. Several other, lesser features, which have their geological origins understood, still lack names. For example, ice scours occur on seabeds all around Canada but, because of their widespread origin, will probably be named after some regional geographical feature, e.g., "Beaufort Scours" after the Beaufort Sea. The seafloor of Hudson Bay as surveyed by H. Josenhans also shows these features; similarly, the Labrador Shelf done by Josenhans and C.F.M. Lewis, and The Grand Banks of Newfoundland done by Lewis and G.B. Fader. Many other undersea features characterized by seabed processes, such as sand waves, fluting, and associated phenomena, will remain formally unnamed, but will undoubtedly be named in association with local or regional geographical features. Aside from these problematic features, an enormous chore still awaits in the matter of naming minor undersea features.

For the 1990s, a submission already has been made by Geological Survey officers. Our colleague, R.F. Macnab, on behalf of his associates at AGC has requested that an undersea feature be named after the late Michael J. Keen, who died suddenly on January 8, 1991. Because Mike Keen was the second director of AGC, it is both commendable and proper that his fellow officers would commemorate his name in this manner. An unnamed canyon lying east of The Grand Banks of Newfoundland between **Beothuk Knoll** and **Flemish Cap** has been selected for this purpose. Macnab and associates feel that this choice is appropriate because it lies in the northwest Atlantic on the continental margin of eastern Canada - an area related to Keen's many research interests. The proposed name of the feature is *Michael Keen Canyon*; thus, it should serve as a fitting memorial.

Finally, mention is made of another memorial canyon, also situated along the continental margin of eastern Canada. It is near the landmass surveyed by Canada's foremost geologist of all time. The feature is called **Logan Canyon** and lies due south of Sable Island. The data sheets fail to indicate who submitted this name, recording only the fact that it is named after Sir William E. Logan (1798-1875), the founder and first director of the Geological Survey of Canada (1842-1869).

In closing this article, it is appropriate to mention the most recent naming submission in honour of Sir William Logan. It concerns a system of undersea channels and troughs occurring in the Gulf of St. Lawrence region. These features lie in the very heartland of Logan's initial field work during his early years as director, and were proposed, collectively, as *Logan Troughs*. This name, a tribute to Logan, was submitted to the Advisory Committee in commemoration of the 150th anniversary of the Geological Survey of Canada.

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The author thanks all those who have helped make this article possible.

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10 Approved in 1985 as **Reed Trough**.

11 They include: J.D. Adshead, R.G. Currie, E.E. Davis, J.M. Franklin, W.D. Goodfellow, I.R. Jonasson, L.K. Law, J.W. Lyndon, and R.D. Macdonald.