

GEOGRAPHICAL BULLETIN
VOLUME 7, NUMBERS 1, 2, 3 and 4
1965

GENERAL INDEX

GEOGRAPHICAL BRANCH
Department of Energy, Mines and Resources
OTTAWA, CANADA

G
4
G46
Index
1965
omgre

This document was produced
by scanning the original publication.

Ce document est le produit d'une
numérisation par balayage
de la publication originale.





Table of Contents

Table des matières

Volume 7, Number 1, 1965

Glacier flow and analogue simulation.....	<i>J. R. Mackay</i>	1
Historical records of freeze-up and break-up on the Churchill and Hayes rivers.....	<i>D. K. MacKay and J. R. Mackay</i>	7
Some factors affecting the movement of foreign traffic through Saint John.....	<i>J. A. Rayburn</i>	18
The geography of the orchard industry in Canada....	<i>R. R. Krueger</i>	27
Book Notes.....		72

Volume 7, Number 2, 1965

The land-use sector of the Canada Land Inventory..	<i>J. B. McClellan</i>	73
The functional structure of Canadian cities: a classification of cities.....	<i>J. W. Maxwell</i>	79
Gas-domed mounds in permafrost, Kendall Island, N.W.T.....	<i>J. Ross Mackay</i>	105
Break-up on the Mackenzie River and its delta, 1964..	<i>D. K. MacKay</i>	117
The corries of the northern Nain-Okak section of Labrador.....	<i>J. T. Andrews</i>	129
Major end moraines in eastern and central Arctic Canada.....	<i>G. Falconer, J. D. Ives, O. H. Løken and J. T. Andrews</i>	137
National Advisory Committee on Geographical Research.....		155
Comité consultatif national de la recherche géographique.....		157
Book Review.....		159

Volume 7, Numbers 3 and 4, 1965

Flood-damage reduction in Canada.....	<i>Ian Burton</i>	161
Depopulation of farms in relation to the economic conditions of agriculture on the Canadian prairies.....	<i>M. L. Szabo</i>	187
The land-use survey of the Niagara Peninsula: a critical review....	<i>L. G. Reeds</i>	203
Alexander Mackenzie's exploration of the Grand River..	<i>J. K. Stager</i>	213
Postglacial emergence at the south end of Inugsuin Fiord, Baffin Island, N.W.T.....	<i>O. H. Løken</i>	243
Book Review.....		259

GENERAL INDEX

- Agricultural Rehabilitation and Development Act, 73
- Agriculture; *see* Niagara Peninsula, orchards, prairies
- Aklavik
Climate records of (1942-1950), 111, 112, 113
- Alaska
Glacial terminus in, 2
Map, 2 (facing)
- Alberta; *see* prairies
- Analogue field plotter, 1, 2, 5, 6,
- Analogue simulation
Use of
In glacier flow, 1-6
- Ancaster Township, 207
- Annapolis Valley
Orchard industry, 28, 30, 31, 33, 34-39
Acreage, 30, 34
Apple varieties, 38
Climate, 34, 35
Diseases, 35
Control of, 38
Location, 34
Map, 29
Nova Scotia Apple Marketing Board Ltd., 36
Nova Scotia Fruit Growers' Association, 36
Scotian Gold Co-operative Ltd., N.S., 38
Soils, 34
Trends and economic conditions, 35-39
- Apples
Ten leading world producers of, 30, 31
- Arctic; *see* analogue simulation, Churchill and Hayes
Rivers, corries, gas-domed mounds, end moraines, Inuguin Fiord, Mackenzie River and Delta
- Argentina
Apple production, 31
- Atlantic Development Board, 23
- Ausable River Conservation Authority, 163
- Austria
Apple production, 31
- Baffin Island; *see* also Inuguin Fiord
Crag and tail, 143
Drumlinoid, 142, 143
Drumlins, 142
End moraines, 137, 148
Photos, 139, 140, 141
Ice tongues, 138
Moraines, 138-143
Age of, 146-148
Maps, 138 (facing), 145, 147
- Bain, K. and Sinclair, M. H.
Land-use maps
Value of, 207
- Barnes Ice Cap, 149
- British Columbia Tree Fruits Ltd., 62
- Beach deposits; *see* Inuguin Fiord
- Belleville; *see* also cities
Floods, 161, 166, 168-170
Prevention plans, 168-170
Map, 169
- Bernier Bay
End moraines, 138, 142
Photo, 141
- Bieler Lake; *see* Conn Lake
- Binbrook Township, 207
- Bow River
Floods; *see* Calgary
- Bow River Control Board, 172, 173
- Britain; *see* also United Kingdom
Flood policy, 165
- Break-up; *see* ice break-up
- British Columbia
Orchard industry, 28, 30, 31, 32, 33, 56-67
Acreage, 30
Apple production, 60
British Columbia Tree Fruits Ltd., 62
British Columbia Fruit Growers Association, 68
Climate, 56, 58
Fruits
Types, 56
Production, 60
Location, 56
Map, 57
Regions
Creston, 64
Grand Forks-Kootenay-Arrow Lakes, 63-64
Okanagan Valley, 64-67
Upper-Fraser-Thompson, 63
Vancouver Is.-Lower Fraser Valley, 62-63
Royal Commission on the Tree-Fruit Industry of British Columbia, 62
Trends and economic conditions, 58-62
- British Columbia Fruit Growers' Association, 68
- Business service, 83, 86, 87, 96-103 *passim*
- Caistor Township, 207
- Calgary; *see* also cities
Floods, 161, 168, 170-173
Prevention plans, 171-173 *passim*
Map, 172

- Canada
- Flood policy, 163-164, 168; *see also* flood plains, flood policies, floods
 - Orchard industry, 27-69; *see also* Annapolis Valley, British Columbia, Ontario, Quebec, and Saint John Valley
 - Acreage, 29, 30
 - Fruit and Vegetable Export Sales Ltd., 32
 - Fruits
 - Apples
 - Export of, 30, 31
 - Production of, 29, 31
 - Processed, 31, 32
 - Value of
 - Tree fruits, 30
 - Regional specialization, 32-33
 - Regions
 - Delimitation of, 33-34
 - Trends, 28-32
 - Current, 30
 - Past, 28, 29
- Canada Land Inventory
- Land-use sector, 73-78, 210
 - Classification used, 73, 76-77
 - Development of, 75-76
 - Geographical Branch, 73, 75, 77
 - Limitations of, 77
 - Map preparation, 77
 - Purpose of, 74-75
- Canada Water Conservation Assistance Act, 168
- Canadian Ice Distribution Survey of the Geographical Branch, 117
- Canborough Township, 207
- Cayuga Township, 207
- Chateauguay-Napierville
- Orchard industry, 44, 45
 - Map, 41
- Chi square test, 189
- Churchill harbour
- Closing dates (1932-1962), 14
- Churchill and Hayes Rivers
- Location
 - Map, 8
 - Ice conditions
 - Break-up, 10, 10-16
 - Freeze-up, 9-10, 10-16
 - Test for random stationary series, 13
- Cirques; *see* corries
- Cities; *see also* floods
- Classification, purpose of, 79, 80
 - Functional diversification, reasons for, 92
 - Heartland, 79, 81, 82, 91-96 *passim*, 100-104
 - Location, 81, 82
 - Map, 84
 - Non-system, 85
 - Peripheral, 79, 91-96 *passim*, 96-100
 - Eastern, 81, 82, 99-100
 - Northern, 81, 82, 98-99
 - Western, 81, 82, 96-98
 - Population, 81, 82
 - Specialization, reason for high rate of, 92
 - Ullman and Dacey, 79, 80, 82, 85, 87
- City employment structure; *see* city functional structure
- City functional categories
- Construction, 83, 86, 87, 96-104 *passim*
 - Business service, 83, 86, 87, 96-103 *passim*
 - Community service, 83, 86, 87, 89, 91, 96-103 *passim*
 - Map, 88
 - Extraction, 83, 85, 86, 87, 89, 92, 93, 94, 99, 100, 104
 - Map, 88
 - Finance, insurance, real estate, 83, 86, 87, 91, 96-104 *passim*
 - Government service, 83, 86, 87, 89, 91, 92, 94, 96-104 *passim*
 - Map, 88
 - Manufacturing, 83, 85, 86, 87, 89, 91-104 *passim*
 - Maps, 88, 90, 92 (facing)
 - Mining; *see* extraction
 - Personal service, 83, 86, 87, 96-103 *passim*
 - Public utilities, 83, 86, 87, 96-104 *passim*
 - Recreation, 83, 86, 87, 96-104 *passim*
 - Regression lines, use in determining of, 80, 82, 85, 86
 - Retail trade, 83, 86, 87, 89, 91, 94, 96-104 *passim*
 - Map, 88
 - Transportation, 83, 86, 87, 89, 91, 94, 96-102 *passim*
 - Map, 88
- City functional structure
- Characterization of
 - Basic employment, 80, 82, 85
 - Dominant and distinctive functions, 85-87, 91, 92, 96-104 *passim*
 - Map, 88
 - Excess (basic) employment, 80, 82, 85, 87
 - Functional specialization, 87
 - Map, 88
 - Definition of, 80
- City types
- Highly specialized cities (low rates of manufacturing and wholesale trade), 94
 - Low levels of specialization (high values of wholesale trade, low values of manufacturing), 94

- Map, 92 (facing)
- Metropolitan centres, 94
- Multi-functional cities, 94, 95
- Specialized manufacturing centres, 93, 94
- Climate
 - Determination of past climates by use of fossils, 255-7
- Clinton Township
 - Land use, 204, 206
 - Map, 204 (facing)
- Cockburn glacial phase, 137, 148, 149, 150
 - Map, 145, 147
- Cockburn Ice Sheet, 137, 149
 - Map, 145, 147
- Cockburn moraine
 - Age, 146
 - Radiocarbon dates, 146, 148
 - System, 137, 142, 143, 150
 - Map, 147
- Comité Consultatif National de la Recherche Géographique, 157-8
- Community service, 83, 86, 87, 89, 91, 96-103 *passim*
 - Map, 88
- Computer
 - Use in determining depopulation of prairie farms, 188-199 *passim*
- Conn and Bieler Lakes
 - End moraines, 149
 - Photo, 140
- Conservation agencies
 - Ausable River, 163
 - Bow River, 172, 173
 - Don Valley, 175
 - Metro Toronto and Region, 163, 175, 176, 180
 - Moira River, 163, 168, 170
 - Tennessee Valley, 180
 - Upper Thames River, 163
- Construction, 83, 86, 87, 96-104 *passim*
- Corries
 - Altitude, 132, 133
 - Location, 131-133
 - Map, 130
 - Morphology, 133
 - Orientation, 129-136 *passim*
 - Pattern, 131-133
 - Snowlines, 134-136
- Correlations of variables for determining depopulation of prairie farms, 192-195 *passim*
- Crag and tail, 143
- Creston
 - Orchard industry, 64
 - Map, 57
- Cryoturbation
 - Inugsuin Fiord, 248
- Cumberland Peninsula
 - Moraines, 138
- Dams
 - Flood reduction, 162, 171, 172, 173, 180, 181
- Dating
 - Types
 - Titrium, 112, 115
 - Radiocarbon, 144-148, 149, 150, 243, 251-252, 256, 257
- Deglaciation
 - Inugsuin Fiord, 245
 - Wisconsin ice sheet
 - Map, 145
- Deux Montagnes
 - Orchard industry, 43, 44
 - Map, 41
- Don Valley Conservation Authority, 175
- Drift deposit, 247
- Drumlinoid, 142, 143
- Drumlins, 142
- Dykes
 - Flood reduction, 162, 171, 172, 173, 180
- Eastern Lake Ontario
 - Orchard industry, 49-50
 - Map, 48 (facing)
- Elbow River
 - Floods, 170, 171
 - Map, 172
- Emergence curve
 - Definition, 244
 - Errors of, 243
 - Inugsuin Fiord, 244, 251-2, 253, 254, 255
- End moraines
 - Eastern and central arctic Canada, 137-153
 - Maps, 138 (facing), 147
 - Photos, 139, 140, 141, 142
- Essex county; *see* Kent-Essex
- Export foreland, N.B., 21-22
- Export hinterland, N.B., 19-20
- Exports; *see* Saint John
- Extraction centres, 83, 85, 86, 87, 89, 92, 93, 94, 99, 100, 104
 - Map, 88

Farms

Depopulation of; *see* prairies

Favexsales, 32

Finance, insurance and real estate, 83, 86, 87, 91, 96-104 *passim*

Flood plains

Settlement of, 164, 165, 167, 168, 170, 171, 173-176 *passim*

Flood policies

Britain, 165

Canada, 163, 164, 168

United States, 164

Floods

Belleville, 161, 166, 168-170

Calgary, 161, 168, 170-173

Damage reduction, 161-183

Cost of, 168, 175

Expenditures of, U.S.A., 164

Financial benefits of, 168, 176

Deaths due to, 174, 175

Financial loss, 162, 164, 166, 174, 175

Human response to, 167-168

Maps, 169, 172, 174, 175 (facing), 176 (facing), 177 (facing)

Potential areas for, 176-180

Red Deer, 161, 168, 173-175

Stages of

Bank-full, 166

Damage, 166

Timmins, 162, 167

Toronto, 161, 162, 167, 168, 175-176

Types

Convictional storm, 166-167

Cyclonic storm, 166, 167

Ice jam and ice break-up, 11, 119, 121, 122, 125, 166, 168, 172, 173, 174

Snow melt, 166, 171, 173

Vancouver, 162

Winnipeg, 162, 166

Fluting, 5

Foreign trade; *see* Saint John, port of

Fossils

Dates of, 251-252, 256

Indicators of past climate, 255-7

Types

Astarte montagii var. *striata*, 257

Chlamys islandicus, 248, 256, 257

Clinocardium ciliatum, 256

Ericaceae, 248

Hiatella arctica, 248, 256

Macoma balthica, 256

Mya pseudoarenaria, 256

Mytilus edulis, 256, 257

Pucinellia, 248

France

Apple production, 31

Fraser-Thompson Valleys

Orchard industry, 63

Map, 57

Fraser Valley; *see* also Vancouver Is.-Lower Fraser Valley

Floods, 162

Freeze-up

Churchill and Hayes Rivers, 10-15, 15-16

Dating of, 10-15

Definition of, 9

Fresh Peach Growers' Marketing Board, Ont., 49

Fruit and Vegetable Export Sales Ltd., 32

Gas

Methane

Production of, 109, 110, 111, 113, 115

Gas-domed mounds

Dating of, 112-115

Formation of, 109-115

Gas, origin of, 109

Rate produced at, 109

Springs of, 115

Type of, 105, 109

Ice crystals in, 107

Map, 106

Methane, production of, 110, 111, 113, 115

Overburden, 107, 108, 109, 110

Photo, 105

Polygon fissures of, 112

Size of, 106, 107

Geographical Branch, 17, 73, 75, 77

Georgian Bay

Orchard industry, 50, 55-56

Map, 48 (facing)

Glacial; *see* postglacial

Glaciation

Inugsuin Fiord, 244, 245

Glacier flow and analogue simulation, 1-6

Glaciers, 129, 131, 133, 135, 143, 148, 150, 244, 245

Glanford Township, 207

Government service, 83, 86, 87, 89, 91, 92, 94, 96-104 *passim*

Map, 88

Grand Forks-Kootenay-Arrow Lakes,

Orchard industry, 63-64

Map, 57

Grand River; *see* also Mackenzie River

Exploration by A. Mackenzie, 213-240

Maps of journey, 215, 217, 222, 223, 227

River of Disappointment, 240

- Great Bear Lake
Simulation of Wisconsin ice sheet, 5
Map, 4
- Grimsby Township; *see* South Grimsby Township
- Gyttja
Lac Seul moraine, 150
- Halifax
Port of, 17, 21, 22–23
- Hayes River; *see* Churchill and Hayes Rivers
- Heartland cities
Characteristics of, 79, 81, 82, 89, 91–96 *passim*,
100–104
Map, 84, 88, 90
- Houses
Flood proofing of, 176, 180–181
- Hudson's Bay Company, 213
- Huntingdon region
Orchard industry, 44, 45
Map, 41
- Hurricane Hazel
Floods caused by, 167, 175, 176
- Ice break-up
Churchill and Hayes Rivers, 7–16
Dating, 10–15 *passim*
Floods, 11, 122, 166, 168, 172, 173, 174
Mackenzie River and Delta, 117–128
Time of
Conditions influencing, 122
- Ice jam; *see* floods
- Île d'Orléans
Orchard industry, 46
Map, 41
- Import foreland, N.B., 22
- Import hinterland, N.B., 20–21
- Imports; *see* Saint John
- Insurance; *see* finance
- Inugsuin Fiord
Beach deposit, 247–251
Deglaciation, 245
Description, 244
Emergence curve, 244, 251–252, 253, 254, 255
Errors of, 243
Fossils, 248, 255–257
Dates of, 251–252, 256
Glaciation, 244, 245
Maps, 244, 245, 246
Photos, 247, 253
Postglacial emergence, 243–257
Submarine topography, 249
- Inuvik
Water levels, 127
- Italy
Apple production, 31
- Japan
Apple production, 31
- Kame moraine
Melville Peninsula, 143
- Keewatin mainland
Moraines, 148
Age of, 148
- Kendall Island; *see* also gas-domed mounds
Polygon fissures of, 106, 112
Soil, seasonal depth of thaw, 109–112
Temperature departures from norms, 113
Vegetation of, 106
- Kent-Essex counties
Orchard industry, 50, 53–54
Map, 48 (facing)
- Krueger, R.
Land-use maps
Value of, 207
- Labrador; *see* corries, Nain-Okak
- Land use; *see* Canada Land Inventory, Niagara
Peninsula
Orchards; *see* Annapolis Valley, British Columbia,
Canada, Ontario, Quebec
- Laplace equation, 1
- Linear regressions, 195
- London region
Orchard industry, 50, 55
Map, 48 (facing)
- MacAlpine moraine, 137, 144, 145, 150
- Machinery and equipment
Produce value per dollar invested in, 194
Value of, per acre of cropped land, 193
- Mackenzie, Alexander
Exploration of the Mackenzie R.; *see* Grand River
- Mackenzie Delta
Map, 4
Simulation of Wisconsin ice sheet, 3, 5
- Mackenzie River and Delta; *see* also Grand River
Break-up on, 117–128
Canadian Ice Distribution Survey of the Geo-
graphical Branch, 117
Drainage basin, 117
Floods, 122
Inuvik, water levels, 127
Map, 118

- Navigation season, 127-128
- Photos, 120, 123, 124, 126, 127
- Manitoba
 - Depopulation and economic conditions of farms; *see* prairies
- Manufacturing, 83, 85, 86, 87, 89, 91, 94, 96-104 *passim*
 - Heart of Canada, 91
 - Maps, 88, 90, 92 (facing)
- Mapping; *see* Niagara Peninsula
- Maps; *see* also Niagara Peninsula
 - Comparison of large and small scale, 204, 206
 - Maps, 204 (facing), 205
 - Preparation, 77
- Maritimes Freight Rates Act, 24
- McClellan, J. B.
 - Land-use maps
 - Value of, 207
- Melville Peninsula,
 - Ice movement, 143
 - Kame moraine, 143
 - Moraines, 138
 - Photo, 142
- Metro Toronto and Region Conservation Authority,
 - 163, 175, 176, 180
 - Map, 175 (facing)
- Metropolitan Toronto; *see* Toronto
- Midwestern Ontario
 - Orchard industry, 50, 55
 - Map, 48 (facing)
- Migration from farms; *see* prairies
- Missisquoi
 - Orchard industry, 44-45
 - Map, 41
- Models
 - Statistical, 189-199 *passim*
 - Maps, 198 (facing), 199 (facing)
- Moira River
 - Floods; *see* Belleville
- Moira River Conservation Authority, 163, 168, 170
- Mollusc shells
 - Radiocarbon dates of, 146, 148, 149, 150
- Monteregian Hills
 - Orchard industry, 43-44
 - Map, 41
- Moraines
 - Baffin Island, 138-143, 144, 145-148, 149, 150
 - Cockburn, 137, 138, 143, 145, 146-150 *passim*
 - Keewatin mainland, 148
 - Labrador-Ungava, 144
 - Maps, 138 (facing), 145, 147
 - Melville Peninsula, 138, 143-144
 - Nain-Okak, 144
 - Photos, 139, 140, 141, 142
 - Radiocarbon dating, 144-148, 149, 150
- Multiple regression, 195-199 *passim*
- Nain-Okak, Labrador
 - Climate, 131, 134, 135
 - Climate gradients, 133
 - Corries of, 129-136
 - Map, 130
 - Moraines, 144
- Napierville
 - Orchard industry; *see* Chateauguay-Napierville
- National Advisory Committee on Geographical Research, 155-6
- National Harbours Board, 17, 18, 19, 22
- New Brunswick; *see* Saint John, Saint John Valley
- New Brunswick Apple Exchange Ltd., 40
- Niagara Peninsula
 - Land-use survey, 203-211
 - Agriculture, 204, 206, 207, 210
 - Land-use maps
 - Alternative methods of mapping, 210-211
 - Limitations, 203, 204-206, 210, 211
 - Value, 206-207, 211
 - Maps, 204 (facing), 205, 208, 209
 - Niagara West Sheet, 207-210
 - Orchard industry, 50, 51-52
 - Map, 48 (facing)
- Non-system city, 85
- Norfolk county
 - Orchard industry, 50, 52-53
 - Map, 48 (facing)
- Northwest Company, 213, 214
- Nova Scotia; *see* Saint John
 - Orchard industry; *see* Annapolis Valley
- Nova Scotia Apple Marketing Board Ltd., 36
- Nova Scotia Fruit Growers' Association, 36
- Okanagan Valley
 - Orchard industry, 60, 64-66
 - Map, 57
- Ontario
 - Orchard industry, 28, 30, 31, 32, 33, 46-56
 - Acreage, 30, 48, 50
 - Apples
 - Diseases, 46
 - Production, 47, 50
 - Varieties, 46

- Climate, 46, 47
- Fresh Peach Growers' Marketing Board, 49
- Fruit types, 46
- Location, 46
- Maps, 47, 48 (facing)
- Ontario Food Terminal, 48
- Production, 48
- Regions
 - Eastern Lake Ontario, 49-50
 - Georgian Bay, 55-56
 - Kent-Essex, 53-54
 - London, 55
 - Midwestern, 55
 - Niagara Fruit Belt, 51
 - Norfolk, 52-53
 - Ottawa-St. Lawrence, 49
 - Western Lake Ontario, 50
- Soil, 46
- Tree fruits
 - Production of, 48
- Trends and economic conditions, 46-49
- Ontario Food Terminal, 48
- Orchard industry; *see* Annapolis Valley, British Columbia, Canada, Ontario, Quebec, Saint John Valley
- Ottawa Valley
 - Orchard industry, 49, 50
 - Map, 48 (facing)
- Penny Ice Cap, 138
 - Photo, 139
- Peripheral cities, 79, 81, 82, 89, 91-96 *passim*, 96-100
 - Map, 84, 88, 90
- Permafrost
 - Gas-domed mounds in, 105-115
- Permafrost seal, 115
- Personal service, 83, 86, 87, 96-103 *passim*
- Polygon fissures, 106
- Pond, Peter, 214
- Population; *see also* cities
 - Prairie, 188
- Ports; *see* Saint John
- Postglacial emergence
 - Inugsuin Fiord, 243-257
- Postglacial transgression
 - Inugsuin Fiord, 251
- Prairies
 - Depopulation of farms (in relation to economic conditions of agriculture), 187-202
 - Agriculture
 - Changes in, 188
 - Productivity, 188
- Causes
 - Economic conditions, 187, 188, 189
 - Historical, 187, 188
 - Population surplus, 187
 - Soil, 188, 189, 193, 194
 - Map, 190
- Characteristics of migration
 - Balance of, 196
 - Decline, 187, 188
 - Future, 188, 199, 200
 - Recent (1951-61), 188
- Computer, use of, 189-199 *passim*
- Machinery and equipment
 - Produce value per dollar invested in, 194
 - Value of, per acre of cropped land, 193
- Models (statistical), 189-199 *passim*
 - Maps, 198 (series following)
- Tests
 - Chi square test, 189
 - Correlation of variables, 191-195 *passim*
 - Linear regressions, 195
 - Multiple regressions, 195-199 *passim*
- Public utilities, 83, 86, 87, 96-104 *passim*
- Quebec
 - Orchard industry, 28, 30, 31, 32, 33, 40-46
 - Acreage, 30, 42
 - Climate, 40, 41
 - Location, 40
 - Map, 41
 - Quebec Agricultural Marketing Board, 42, 43
 - Regions
 - Chateauguay-Napierville, 44, 45
 - Deux Montagnes, 43, 44
 - Huntingdon, 44, 45
 - Île d'Orléans, 46
 - Missisquoi, 44-45
 - Monteregian Hills, 43-44
 - Soils, 40
 - Trends and economic conditions, 41-43
- Quebec Agricultural Marketing Board, 42, 43
- Radiocarbon dates, 144-148, 149, 150, 251-252, 256
- Real estate; *see* finance
- Recreation, 83, 86, 87, 91, 96-104 *passim*
- Red Deer; *see also* cities
 - Floods, 161, 168, 173-175
 - Prevention plans, 174-175
 - Map, 174
- Red Deer River
 - Floods; *see* Red Deer
- Red River
 - Floods, 162, 166
- Regression lines, 80, 82, 85, 86

- Retail trade, 83, 86, 87, 89, 91, 94, 96-104 *passim*
Map, 88
- Rivers; *see* Floods
- Rodhe's weighting system, 13, 14, 15
- Royal Commission on the Tree-Fruit Industry of British Columbia, 62
- Rural population
Decline of; *see* prairies
- Saint John
Port of, 17-25
Cargo
Recent trends, 17
Competing ports
Halifax, 22-23
Inland, 23
United States, 23
Export foreland, 21-22
Export hinterland, 19-20
Exports
Commodities, 19, 20, 22, 23, 24
Market, 21, 22
Seasonality, 22
Source, 20
Tonnage, 19, 22, 24
Future of, 24
Import foreland, 22
Import hinterland, 20-21
Imports
Commodities, 17, 20, 21, 22
Destination, 20, 21
Seasonality, 22
Source, 22
Tonnage, 20
Maps, 20, 21
Maritimes Freight Rates Act, 24
National Harbours Board, 17, 18, 19
Photos, 18, 19
Rate agreements and adjustments, 23-24
Saint Lawrence Seaway, 23
Situation, 19
- Saint John Valley
Orchard industry, 28, 30, 39-40
Acreage, 30, 39
Apples
Acreage, 39
Production, 40
Varieties, 40
Climate, 39
Location, 39
Map, 39
New Brunswick Apple Exchange Ltd., 40
Soils, 39
Trends and economic condition, 39-40
- Saint Lawrence Seaway, 23
- Saint Lawrence Valley
Orchard industry, 49, 50
Map, 48 (facing)
- Saskatchewan
Depopulation and economic conditions of farms;
see prairies
- Scandinavian ice sheet
Simulation of flow, 5
- Scotian Gold Co-operative, Ltd., N.S., 38
- Seneca Township, 207
- Services; *see* community and government
- Shells; *see* also fossils
Determining position in strata, 248
- Sinclair, M. H.; *see* Bain, K.
- Soil zones
Map, 190
Prairies, 188, 189, 193, 194
Value of machinery and equipment per acre of cropped land, 193
Value of products sold per dollar invested in machinery and equipment, 194
- South Grimsby Township
Land use, 206, 210
Map, 205
- Specialization index, 87, 89, 96-104 *passim*
Map, 88
- Switzerland
Apple production, 31
- Systems
City, 85
- Tennessee Valley Authority, 180
- Timmins; *see* also cities
Floods, 162, 167
- Titrium dating, 112, 115
- Toronto; *see* also cities
Floods, 161, 162, 167, 168, 175-176
Prevention plans, 175-176
Financial benefits of, 176
Map, 175 (facing)
- Trade; *see* Saint John
- Transportation, 83, 86, 87, 89, 91, 94, 96-102 *passim*
Map, 88
- Tuscarora Indian Reserve, 207
- Ullman and Dacey, 79, 80, 82, 85, 87
- United Kingdom; *see* also Britain
Apples
Imports of, 30
Production of, 31

- United States
 Apple production, 31
 Flood policies, 164
 Flood control
 Expenditures of, 164
 Orchard industry, 32
 Ports
 Influence on port of Saint John, 23
- Uplift curve; *see also* emergence curve
 Definition, 244
- Upper Thames River Conservation Authority, 163
- Urban; *see also* cities
 Encroachment on agricultural land, 50, 51, 52,
 54, 61, 206, 211
 Renewal
 Aid in flood reduction, 161, 170, 181-182
- Vancouver; *see also* cities
 Floods, 162
- Vancouver Island-Lower Fraser Valley
 Orchard industry, 62-3
 Map, 57
- Welland East, 207
- West Germany
 Apple production, 31
- Western Lake Ontario
 Orchard industry, 50
 Map, 48 (facing)
- Wholesale trade, 83, 86, 87, 91, 93, 94, 96-103 *passim*
 Map, 90, 92 (facing)
- Winnipeg; *see also* cities
 Floods, 162, 166
- Wisconsin Ice Sheet
 Centre of, 2
 Direction of flow, 2, 3, 5, 6
 Maps, 2 (facing), 3, 4, 5
 Terminus, 2, 3, 5

AUTHOR INDEX

- Andrews, J. T.; *see also* Falconer, G.
 The corries of the northern Nain-Okak section of
 Labrador, 129-136
- Burton, Ian
 Flood-damage reduction in Canada, 161-185
- Falconer, G.; Ives, J. D.; Løken, O. H.; Andrews,
 J. T.
 Major end moraines in eastern and central Arctic
 Canada, 137-153
- Krueger, R. R.
 The geography of the Orchard Industry in Canada,
 27-71
- Ives, J. D.; *see* Falconer, G.
- Løken, O. H.
 Postglacial emergence at the south end of Inugsuin
 Fiord, Baffin Is., N.W.T., 243-258
- MacKay, D. K.
 Break-up on the Mackenzie River and its delta,
 1964, 117-128
- MacKay, D. K., and Mackay, J. R.
 Historical records of freeze-up and break-up on
 the Churchill and Hayes rivers, 7-16
- Mackay, J. R.; *see also* MacKay, D. K.
 Gas-domed mounds in permafrost, Kendall
 Island, N.W.T., 105-115
 Glacier flow and analogue simulation, 1-6
- Maxwell, J. W.
 The functional structure of Canadian cities: a
 classification of cities, 79-104
- McClellan, J. B.
 The land-use sector of the Canada Land Inventory,
 73-78
- Rayburn, J. A.
 Some factors affecting the movement of foreign
 traffic through Saint John, 18-25
- Reeds, L. G.
 The land-use survey of the Niagara Peninsula: a
 critical review, 203-211
- Stager, J. K.
 Alexander Mackenzie's exploration of the Grand
 River, 213-241
- Szabo, M. L.
 Depopulation of farms in relation to the economic
 conditions of agriculture on the Canadian
 prairies, 187-202

BOOK REVIEWS and BOOK NOTES

- Geology and Landforms as Illustrated by Selected Canadian Topographic Maps, (David M. Baird); pp 59 Geol. Surv. Can., Paper 64-21; p. 259-262
- Topographic Maps of Canada, Illustrating Geology and Landforms, (Surveys and Mapping Branch); p. 259-262
- Surficial Geology, Nichicun-Kaniapiskau Map-Area, Quebec, (O. L. Hughes); pp. 20, Geol. Surv. Can., Bull. 106, 1964; p. 159
- Surficial Geology of the Red Lake-Lansdowne House Area, Northwestern Ontario, (V. K. Prest); pp 21, Geol. Surv. Can., Paper 63-6, 1963; p. 72
- Surveying Instruments and Methods for Surveys of Limited Extent, (Philip Kissam); McGraw-Hill Book Company Inc., 1956; p. 72
- The Western Interior of Canada, a Record of Geographical Discovery, 1612-1917, (John Warkentin, ed.); pp 304, McClelland and Stewart Ltd., 1964; p. 72



GSC/CGC OTTAWA



OOG 02890994