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A BIBLIOGRAPHY ON SNOW AND ICE

compiled by D.C. PEARCE

with the assistance of

Miss B.G. White and Miss J. O'Flanagan of the Library staff

DIVISION OF BUILDING RESEARCH . NATIONAL RESEARCH COUNCIL . OTTAWA, CANADA

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October, 1951

A BIBLIOGRAPHY ON SNOW AND ICE

This bibliography is composed of references to articles on snow and ice, and related topics which have appeared in a group of Canadian journals from their beginning until December, 1950.

1) CANADIAN ENGINEER. In 1946 it became two journals, ROADS AND BRIDGES, and WATER AND SEWAGE.

ROADS AND BRIDGES. It became ROADS AND CONSTRUCTION, January, 1950, and ROADS AND ENGINEERING CONSTRUCTION, June, 1950.

WATER AND SEWAGE. It became WATER AND SANITATION, January, 1950, and MUNICIPAL UTILITIES, September, 1950.

- 2) CANADIAN SOCIETY OF CIVIL ENGINEERS. TRANSACTIONS. It became JOURNAL OF THE ENGINEERING INSTITUTE OF CANADA, v.1-4 in 1918 and ENGINEERING JOURNAL, v.5 in 1922.
- 3) ROYAL SOCIETY OF CANADA. TRANSACTIONS. Section III.

References are listed as follows:

- 1. Broad subject groups pages 1 to 34
- 2. Chronologically by journal pages 35 to 61
- 3. Author index pages 62 to 69 Refers only to subject listing.

Index to Abbreviations

Can. Engr. - Canadian Engineer.

Roy. Soc. Can. Trans. - Royal Society of Canada. Iransactions.

Can. Soc. Civ. Engr. Trans. - Canadian Society of Civil Engineers.
Transactions.

Eng. J. - Engineering Journal.

n. - number

p. - page

pt. - part

sec. - section

ser. - series

v. - volume

SUBJECT INDEX

AIRDROMES, Winter Maintenance see AIRPORTS, Winter Maintenance.

AIRFIELDS, Winter Main enance see AIRPORTS, Winter Maintenance.

AIRPORTS, Winter Maintenance.

ANONYMOUS

Ice control at airports. Roads and Bridges. v.82, n.2, Feb. 19世。p.81.

Lessons from past experience in combating snow on airports.

Roads and Bridges. v.79, n.9, Sept. 1941, p.69-72, p.104.

Snow handling methods on Canadian airports. Roads and Bridges. v.78, n.10, Oct. 1940, p.30-32.

Snow handling on airports. Results of R.C.A.F. experience.
Roads and Bridges. v.83, n.12, Dec. 1945, p.64-66, p.97-99.

Snow problems at Canada's airports. Can. Engr. v.75, n.16, Oct. 18, 1938, p.24-28.

Snow removal at Canada's airports. Can. Engr. v.77, n.16, Oct. 17, 1939, p.15-18.

hirty roto wings and offset plows for R.C.A.F. airports. Roads and Bridges. v.80, n.9, Sept. 1942, p.38, p.86.

Winter maintenance methods for R.C.A.F. airfields. Roads and Bridges. v.80, n.10, Oct. 1942, p.33-35, p.100-104.

KEATING, C.E.

An airport manager's diary. Report on snow removal operations at Moncton, N.B., airport during the winter 1940-41. Roads and Bridges. v.79, n.9, Sept. 19 1, p.74, p.114-18.

McLEAN, A.D.

Maintaining snow cov red airdromes. Can. Engr. v.77, n.16, Oct. 17, 1939, p.42.

ROBERTS T.

Wartime experience in runway clearance. Winter maintenance of airports. Roads and Bridges. v.80, n.10, Oct. 1 42, p.29-32, p.66-0.

SHANNON, J.R.

New method of remaining snow from airports. Roads and Bridges. v.85, n.4, Apr. 1947, p.95-96, p.120-124.

ANCHOR ICE see FRAZIL ICE.

AVALANCHES see SNOW SLIDES.

BRIDGES see PIERS AND BRIDGES.

CONSTRUCTION, Winter see WINTER CONSTRUCTION.

CHEMICAL AND THERMAL SNOW CLEARING see SNOW REMOVAL.

COFFERDAM
see HYDRO-ELECTRIC DEVELOPMENTS, Ice Problems
ICE COFFERDAMS

COLD WEATHER CONSTRUCTION see WINTER CONSTRUCTION.

COSTS, Snow Removal see SNOW REMOVAL, ECONOMICS.

CURLING STONES

HARRINGTON, E.L. Experimental study of the motion of curling stones. Roy. Soc. Can. Trans. Ser. 2, v.18, 1924, sec. 3, p.247-259.

DAMS, Ice Pressure see HYDRO-ELECTRIC DEVELOPMENTS, Ice Problems.

DRIFT CONTROL
See DRIFT PREVENTION.

DRIFT PREVENTION, Snow Fences, Hedges, etc.

ANONYMOUS

Location of snow fence. A brief article in the monthly feature, "Questions and Answers." Roads and Bridges. v.78, n.10, Oct. 1940, p. 48.

Snow drift control by highway design methods. Roads and Bridges. v.78, n.9, Sept. 1940, p.70.

Snowfences for drift control. Roads and Bridges. v.81, n.10, Oct. 1943, p.110-112.

Wood-lath snow fence. A brief entry in the monthly feature, "Questions and Answers." Roads and Bridges. v. 78, n.12, Dec. 1940, p.42.

- FINNEY, E.A.
 Snow drift control on highways. Can. Engr. v.72, n.10, Mar. 9, 1937, p.7-9.
- FRASER, C. Experiments with elevated, inclined snow fence on Ontario roads. Roads and Construction. v.88, n.4, Apr. 1950, p.88-90, p.115-117.
- HARVIE, W.H.

 Snow, in relation to highway location and design. Roads and Bridges. v.80, n.10, Oct. 1942, p.123, p.127, p.130-131.
- HAY, A.K.

 Drift control of roads in winter. Can. Engr. v. 69, n.19,
 Nov. 5, 1935, p.9-10.
- JONES, E.W. Snow hedges in Simcoe county. Roads and Bridges. v.83, n.5, May, 1945, p.132-133.
- LYONS, M.A. Snowfence and permanent hedges. Roads and Bridges. v.81, n.10, Oct. 1943, p.43, p.82.
- MARRITT, I.C.
 Planting of snow hedges. Roads and Bridges. v.83, n.5, May, 1945, p.66-67, p.142.
- MOORE, H.J.
 Hedges reduce snow-plowing costs. Roads and Bridges. v.83, n.5, May, 1945, p.64-66.

ROBBINS, C.A.

Theory and practice in snow fence erection. Can. Engr. v.75, n.16, Oct. 18, 1938, p.16-18.

ROBBINS, C.A.
Winter road maintenance and drift prevention in Ontario.
Can. Engr. v.67, n.20, Nov. 13, 1934, p.17-19.

ECONOMICS OF SNOW REMOVAL see SNOW REMOVAL, ECONOMICS.

EQUIPMENT see SNOW REMOVAL EQUIPMENT.

FOUNDATIONS, Frozen Ground see PERMAFROST.

FRAZIL ICE

ANONYMOUS

Frazil. Can. Engr. v.17, n.24, Dec. 17, 1909, p.666, 674.
Frazil ice. Discussion at Engineer's club meeting. Toronto.
Dec. 8, 1904. Can. Engr. v.12, n.1, Jan. 1905, p.3.
Frazil ice in Lachine rapids. Can. Engr. v.6, n.10, Feb. 1899, p.273.

A remedy for frazil ice. Reference to R.W. Leonard's paper read at Can. Soc, Civ. Engr. autumn meeting. Can. Engr. v.11, n.11, Nov.1904, p.348.

Formation and agglomeration of frazil and anchor ice. Can. Engr. v.5, n.1, May 1897, p.6-10.

BARNES, H.T.
Formation of anchor ice and precise temperature measurements.
Can. Engr. v.12, n.c, June 1905, p.167-168.

BARNES, H.T. Frazil ice. Can. Engr. v.12, n.2, Feb. 1905, p.46-47.

BARNES, H.T.

The ice question as it affects Canadian water power, with special reference to frazil and anchor ice. Roy. Soc. Can. Trans. Ser. 3, v.3, 1909, sec. 3, p.143-178.

- BARNES, H.T.

 Note on frazil and anchor ice with considerations as to freezing point of water. Roy. Soc. Can. Trans. Ser. 3, v.5, 1899, sec. 3, p.17-22.
- COX, J.

 Note on an apparently accidental formation of frazil ice in a cryophorus. Roy. Soc. Can. Trans. Ser. 2, v.10, 1904, sec. 3, p. 3-4.
- DORION, R. Frazil ice problems in pumping stations. Can. Engr. v.72, n.19, May 11, 1937, p.11-14.
- FIELDING, J.S.
 Formation of frazil ice. Can. Engr. v.58, n.6, Feb. 11, 1930, p.217.
- FIELDING, J.S.
 Frazil ice. A letter by J.S. Fielding. Can. Engr. v.12, n.3, Mar. 1905, p.93-94.
- HENSHAW, G.H.

 Frazil ice: on its nature and the prevention of its action in causing floods. Can. Soc. Civ. Engr. Trans. v.l, pt.l, Jan.-June, 1887, p.1-23.
- MURPHY, J. Frazil and anchor ice. Can. Engr. v.14, n.10, Oct. 4, 1907, p.369-372.

see also ICE, PROPERTIES.

FROST ACTION, Roads see ROADS, FROST ACTION.

FROST DAMAGE, Water Systems see WATER SYSTEMS, FROST DAMAGE.

FROZEN GROUND see PERMAFROST.

GLACIERS

CHAPMAN, L.J. and PUTNAM, D.F.

The recession of the Wisconsin glacier in southern Ontario.

Roy. Soc. Can. Trans. Ser. 3, v.43, June 1949, sec. 3, p.23-52.

PUTNAM, D.F. and CHAPMAN, L.J.

The recession of the Wisconsin glacier in southern Ontario.

Roy. Soc. Can. Trans. Ser. 3, v.43, June 1949, sec. 3, p.23-52.

HAIL

LLOYD, F.E.
Structure of hailstones of exceptional form and size. Roy.
Soc. Can. Trans. Ser. 3, v.10, 1916, sec. 3, p.47-50.

HAILSTONES see HAIL.

HEDGES see DRIFT PREVENTION.

HIGHWAYS, Frost Action see ROADS, FROST ACTION.

HIGHWAYS, Ice Control see ICE CONTROL, HIGHWAYS.

HIGHWAYS, Snow Drift Control see DRIFT PREVENTION.

HYDRANTS, Frost Damage see WATER SYSTEMS, FROST DAMAGE.

HYDRAULIC POWER WORK, Ice Problems see HYDRO-ELECTRIC DEVELOPMENTS, Ice Problems.

HYDRO-ELECTRIC DEVELOPMENTS, Ice Problems.

ANONYMOUS

An ice cofferdam. Can. Engr. v.26, n.23, June 4, 1914, p.817. Ice problems at Hydro-electric plants. Can. Engr. v.61, n.18, Nov. 3, 1931, p.15-16.

Ice trouble at Hull electric power house. Can. Engr. v.18, n.3, Jan. 21, 1910, p.64.

Ice troubles in Hydro-electric plants. Can. Engr. v.27, p.21, Nov. 26, 1914, p.693.

Uplift and ice pressure on dams. Letter to the editor. Can. Engr. v.54, n.21, May 22, 1928, p.551.

BARNES, H.T.

The ice question as it affects Canadian water power with special reference to frazil and anchor ice. Roy. Soc. Can. Trans. Ser. 3, v.3, 1909, sec. 3, p.143-178.

- BARNES, H.T.

 The influence of ice on water power development. Can. Engr. v.22, n.26, June 27, 1912, p.862-864.
- BARNES, H.T. Shutdowns due to ice troubles. Can. Engr. v.22, n.3, Jan. 18, 1912, p.186-187.
- BROWN, E. and CLARKE, G.C.

 Ice thrust in connection with Hydro-electric plant development with special reference to the plant at Island Falls on the Churchill river. Eng. J. v.15, n.1, Jan. 1932, p.18-25.
- CLARKE, G.C. and BROWN, E.

 Ice thrust in connection with Hydro-electric plant development with special reference to the plant at Island Falls on
 the Churchill river. Eng. J. v.15, n.1, Jan. 1932, p.18-25.
- ECKENFELDER, G.V. and RUSSELL, B.E. Snare River power project. Eng. J. v.33, n.3, Mar. 1950, p.165-171.
- FENKELL, G.H.
 Intakes of the Great Lakes region. Can. Engr. v.51, n.4,
 July 27, 1926, p.163-168.
- GRANT, B.F.
 Ice diversion, hydraulic models and hydraulic similarity.
 Can. Engr. v.34, n.3, Jan. 17, 1918, p.55-58. Discussion.
 v.34, n.15, Apr. 11, 1918, p.323-327.
- GROAT, B.F.

 Ice diversion for St. Lawrence kiver power company. Can. Engr. v.39, n.21, Nov. 25, 1920, p.545-552.

- HARRISON, C.L.

 Provision for uplift and ice pressure in designing masonry dams. Can. Engr. v.21, n.26, Dec. 28, 1911, p.736.
- HOGG, T.G.
 Ice problems at Hydro-electric plants. Can. Engr. v.47, n.20, Nov. 11, 1924, p.498-500.
- LYON, H.L. Ice troubles at Buffalo. Can. Engr. v.23, n.1, July 4, 1912, p.126.
- McCRARY, J.A.
 Guniting steel penstacks to eliminate trouble due to ice formation. Can. Engr. v.44, n.2, Jan. 9, 1923, p.125-126.
- MORNINGTON, S. Protecting Hydro plants from ice. Can. Engr. v.58, n.4, Jan. 28, 1930, p.169-170.
- MURPHY, J. Ice formation and its prevention. Can. Engr. v.40, n.10, Mar. 10, 1921, p.291-292.
- MURPHY, J.

 Ice problems in power development. Can. Engr. v.58, n.21,
 May 27, 1930, p.612.
- MURPHY, J.

 Ice trouble in hydraulic power work. A reference. Can. Engr.
 v.17, n.24, Dec. 17, 1909, p.674.
- MURPHY, J.

 Ice troubles in hydraulic power work, and methods of overcoming them. Address presented to Applied Science Undergrad
 Society of McGill. Feb. 26, 1908. Can. Engr. v.15, n.18,
 May 1, 1908, p.318-322.
- RIED, C.R.

 Electric heating of rock bars in Hydro-electric plants. Eng. J. v.ll, n.ll, Nov. 1928, p.263-265.
- RUSSELL, B.E. and ECKENFELDER, G.V. Snare River power project. Eng. J. v.33, n.3, Mar. 195, p.165-171.
- SAMSIOE, A.F.
 Ice troubles in Swedish power plants. Can. Engr. v.49, n.7, Aug. 18, 1925, p.231-232.
- SKERRET, R.G.

 Reducing ice pressure with compressed air. Can. Engr. v.45, n.5, July 31, 1923, p.181-185.

WILSON, R.M. Design of Hydro-electric plants for combating ice troubles. Can. Engr. v. 36, n.8, Feb. 20, 1919, p. 237-242, and Eng. J. v.2, n.5, May 1919, p.383-395. Discussion. v.2, n.11, Nov. 1919, p.507.

see also FRAZIL ICE.

HYDRO-ELECTRIC POWER PLANTS. Ice Problems see HYDRO-ELECTRIC DEVELOPMENTS, Ice Problems.

HYDROLOGY see RUNOFF.

ICE-BREAKING

ANONYMOUS

The Canadian government ice-breaker, "Lady Grey". Can. Engr.

v.14, n.4, Apr. 5, 1907, p.150.
Ice breaking. Can. Engr. v.7, n.6, Oct. 1899, p.163-164.
A vessel for north polar navigation and study. Can. Engr. v.10, n.2, Feb. 1903, p.40.

Propulsion and auxiliary machinery in "wind" class ice-breakers. Eng. J. v. 33, n.4, Apr. 1950, p. 271-275.

KENNEDY. J. Ice-breaking steamers on the St. Lawrence. Can. Engr. v.8, n.13, May 1901, p.299-300.

LAMBERT, W. Train ferry. Charlottetown. Eng. J. v.15, n.2, Feb. 1932, p.73-85.

RUNEBERG, R. Steamers for winter navigation and ice-breaking. An abstract. Can. Soc. Civ. Engr. Trans. v.15, pt. 1, Jan. June, 1901, p.95. and Inst. Civ. Eng. Proc. v.140, p.109.

ICE COFFERDAMS

TAUNTON, A.J. Ice cofferdams for repair of bridge piers. Eng. J. v.33, n.7, July, 1950, p.598-601.

ICE CONTROL, AIRPORTS see AIRPORTS, Winter Maintenance.

ICE CONTROL. ROADS AND SIDEWALKS

ANONYMOUS

Ice control from a grain elevator. Roads and Bridges. v.86, n.1, Jan. 1948, p.57-60, p.96.

Ice control on Ontario highways. Can. Engr. v.77, n.16, Oct. 17, 1939, p.14.

Mechanized warfare against snow and ice. A brief editorial comment. Roads and Bridges. v.78, n.12, Dec. 1940, p.13.

Method of treating icy pavements. Can. Engr. v.70, n.24, June 16, 1936, p.19.

Methods of skid-proofing icy pavements. Roads and Bridges. v.79, n.9, Sept. 1941, p.82-84.

New experiments in ice control. A brief editorial comment. Roads and Bridges. v.82, n.11, Nov. 1944, p.51.

Skid-proofing highways with chemically-treated sand. A summary of practice in Ontario. Roads and Bridges. v.81, n.10, Oct. 1943, p.112-114.

Skid tests show desirability of chemically-treated abrasives.

Can. Engr. v.77, n.16, Oct. 17, 1939, p.13-14.

What policy is followed in your municipality with regard to snow and ice removal from sidewalks? Answers to question in the monthly feature, "Round-table conference." Roads and Bridges. v.79, n.2, Feb. 1941, p.27.

- Scientific methods of ice control. Can. Engr. v.53, n.18, Nov. 1, 1927, p.493-494.
- BLAMGREN, E.E.

 Methods of heating ice on highways. (Michigan) Can. Engr.
 v.72, n.1, Jan. 5, 1937, p.11-12.
- CHALMERS, A.E.

 Snow removal and control of icy conditions. Can. Engr. v.72, n.9, Mar. 2, 1937, p.126-130.
- COLLINS, J.R.
 Snow control and treatment of icy surfaces. Can. Engr. v.67, n.20, Nov. 13, 1934, p.25-26.
- COURCHESNE, A.
 Snow control and treatment of icy surfaces. Can. Engr. v. 67, n.12, Sept. 18, 1934, p.73-75.
- CRIEM, R.W.

 Treatment of icy roads alleviates driving hazard. Can. Engr.
 v.70, n.2, Jan. 14, 1936, p.14.

- ETTINGER, L.J.
 - Ice control without abrasives. Roads and Bridges. v.82, n.11, Nov. 1944, p.58-59, p.86-88.
- HIGHWAY RESEARCH BOARD

Treatment of icy pavements. Issued by Highway Research Board. Committee on treatment of icy pavements. Roads and Bridges. v.82, n.10, Oct. 1944, p.67-69, p.109-112.

HIGHWAY RESEARCH BOARD

Treatment of icy pavements. Revision of a bulletin issued by the Highway Research Board, entitled "Recommended practice for treatment of icy pavements". Roads and Bridges. v.86, n.2, Feb. 1948, p.81-84, p.120.

KNIGHT, J.A.

Ice control on streets and highways. Can. Engr. v.69, n.19, Nov. 5, 1935, p.12.

McNEILL, T.A.

Winter problems on divided highways, Snow removal and ice control on Queen Elizabeth way. Roads and Bridges. v.78, n.10, Oct. 1940, p.36, p.102.

RACICOT, J.A.

Winter maintenance and ice control. Can. Engr. v.77, n.25, Dec. 19, 1939, p.8.

REID, R.H.

Ice control on highways. Can. Engr. v.71, n.18, Nov. 3, 1936, p.18.

TREMOYNE, J.E.

Calcium chloride treatment of abrasives used in ice control. Can. Engr. v.75, n.20, Nov. 15, 1938, p.8-10.

VAUGHN, E.J.

Winter maintenance and ice control on highways. Can. Engr. v.66, n.6, Feb. 6, 1934, p.10-11.

WIER, F.E.

Snow removal and control of icy conditions. Can. Engr. v.72, n.9, Mar. 2, 1937, p.116-118.

- ICE DAMAGE, Piers and Bridges see PIERS AND BRIDGES, ICE DAMAGE.
- ICE JAMS, Control of see NAVIGATION, ICE PROBLEMS.

ICE PROBLEMS, Navigation see NAVIGATION, ICE PROBLEMS.

ICE PROPERTIES, THEORETICAL PAPERS

ANONYMOUS

Crushing strength of ice. Can. Engr. v.27, n.23, Dec. 10, 1914, p.743.

Theories of the formation of ice. Can. Engr. v.3, n.4, Aug. 1895, p.89-90.

BARNES, H.T.

Anchor ice formation from the standpoint of the radiation theory. Roy. Soc. Can. Trans. Ser. 2, v.12, 1906, sec. 3, p.65-109.

BARNES, H.T.

Buoyancy of frazil crystals in water. Roy. Soc. Can. Trans. Ser. 3, v.11, 1917, sec. 3, p.61-62.

BARNES, H.T.

Crushing strength of ice. Roy. Soc. Can. Trans. Ser. 3, v.8, 1914, sec. 3, p.19-22.

BARNES, H.T.

Equilibrium between ice and water. Roy. Soc. Can. Trans. Ser. 3, v.1, 1907, sec. 3, p.29-30.

BARNES. H.T.

Formation and adhesion of ice. Eng. J. v.12, n.11, Nov. 1929, p.549-551.

BARNES, H.T.

A note on the structure of ice. Roy. Soc. Can. Trans. Ser. 3, v.29, 1935, sec. 3, p.53-59.

BARNES, H.T.

On the artificial production of frazil ice together with measurements of temperature conditions in the water. Roy. Soc. Can. Trans. Ser. 2, v.10, 1904, sec. 3, p.29-32.

BARNES, H.T.

On the density of ice. Roy. Soc. Can. Trans. Ser. 2, v.8, 1902, sec. 3, p.143-153.

BARNES. H.T.

Physical constants of ice. Roy. Soc. Can. Trans. Ser. 3, v.3, 1909, sec. 3, p.3-28.

- BARNES, H.T. and LUCAS, H.S.B.

 The growth of ice crystals in a Bunsen ice calorimeter. Roy.

 Soc. Can. Trans. Ser. 2, v.10, 1904, sec. 3, p.33-39.
- BARNES, H.T. and MACKAY, H.M. Crushing strength of ice. Roy. Soc. Can. Trans. Ser. 3, v.9, 1915, sec. 3, p.87-92.
- BARNES, H.T., HAYWARD, J.W. and McLEOD, N.M. Expansive force of ice. Roy. Soc. Can. Trans. Ser. 3, v.8, 1914, sec. 3, p.29-49.
- On some points in reference to ice phenomena. Roy. Soc. Can. Trans. Ser. 1, v.4, 1886, sec. 3, p.85-92.
- CLARKE, A.L. and KATZ, L.
 Thermodynamic surfaces of water. Roy. Soc. Can. Trans. Ser. 3, v.33, 1939, sec. 3, p.59-71.
- COOKE, H.P.
 The variation in density of ice. Roy. Soc. Can. Trans. Ser. 2, v.8, 1902, sec. 3, p.122-134.
- FINLAYSON, J.F.
 Tests on shearing strength of ice. Can. Engr. v.53, n.1, July 5, 1927, p.101-103.
- HAYWARD, J.W., BARNES, H.T. and McLEOD, N.M. Expansive force of ice. Roy. Soc. Can. Trans. Ser. 3, v.8, 1914, sec. 3, p.29-49.
- KATZ, L. and CLARKE, A.L.
 Thermodynamic surfaces of water. Roy. Soc. Can. Trans. Ser. 3, v.33, 1939, sec. 3, p.59-71.
- KING, L.V.
 On the penetration of frost in concrete structures. Roy. Soc.
 Can. Trans. Ser. 3, v.12, 1918 sec. 3, p.115-119.
- LUCAS, H.S.B. and BARNES, H.T.

 The growth of ice crystals in a Bunsen ice calorimeter. Roy.

 Soc. Can. Trans. Ser. 2, v.10, 1904, sec. 3, p.33-39.
- MACKAY, H.M. and BARNES, H.T. Crushing strength of ice. Roy. Soc. Can. Trans. Ser. 3, v.9, 1915, sec. 3, p.87-92.
- McLEOD, N.M., BARNES, H.T. and HAYWARD, J.W. Expansive force of ice. Roy. Soc. Can. Trans. Ser. 3, v.8, 1914, sec. 3, p.29-49.

ICEBERGS

ANONYMOUS

Iceberg detection. Can. Engr. v.22, n.16, Apr. 18, 1912, p.545.

BARNES, H.T.
Iceberg detection in navigation. Can. Soc. Civ. Engr. Trans.
v.26, pt. 1, Jan.-June, 1912, p.156-163.

BARNES, H.T.

The rise of temperature associated with melting of icebergs.

Can. Engr. v.23, n.25, Dec. 19, 1912, p.887-888.

ICING

ANONYMOUS

The weight of ice laden telegraph and other wires. Can. Engr. v.10, n.4, Apr. 1903, p.100.
Weight of ice laden trees. Can. Engr. v.10, n.2, Feb. 1903, p.44.
Weight of ice on wires. Can. Engr. v.10, n.5, May, 1903, p.147.

MECHANICAL SNOW CLEARING see SNOW REMOVAL.

NAVIGATION, ICE PROBLEMS

ANONYMOUS

Ice conditions in Hudson Bay and Strait. Can. Engr. v. 30, n. 8, Feb. 24, 1916, p. 289.

BARNES, H.T.

Engineering features in breaking Allegheny ice gorge. Eng. J. v.9, n.11, Nov. 1926, p.453-461.

BARNES, H.T.

Ice conditions in the St. Lawrence river. Can. Engr. v.50, n.6, Feb. 9, 1926, p.207-208.

BARNES, H.T.

Ice formation in Canadian waters and physical laws governing its formation. Can. Soc. Civ. Engr. Trans. v.15, pt. 1, Jan.-June, 1901, p.78-86.

- BARNES, H.T.

 Ice formation on the St. Lawrence. Effect of the sun on general ice conditions. Absorption of sun's heat in the winter. Can.

 Engr. v.20, n.23, June 8, 1911, p.789-792.
- BARNES, H.T.
 On some measurements of the temperature of the Lachine rapids during the winter 1896-97. Roy. Soc. Can. Trans. Ser. 2, v.3, 1897, sec. 3, p.17-30.
- BARNES, H.T.

 On some measurements of the temperature of the river water opposite Montreal. Roy. Soc. Can. Trans. Ser. 2, v.2, 1896, sec. 3, p.37-44.
- BARNES, H.T.
 St. Lawrence and its ice problems. Can. Engr. v.57, n.21, Nov. 19, 1929, p.738-739.
- DUMBLE, J.H.

 Some observations on the expansion and contraction of ice in Canadian waters. Can. Soc. Civ. Engr. Trans. v.5, pt. 2, Oct.-Dec. 1891, p.270-308.
- EWENS, W.E. Control of ice jams in large rivers. Can. Engr. v.74, n.5, Feb. 1938, p.11-13.
- KEEFER, T.C.
 Ice floods and winter navigation of lower St. Lawrence. Roy.
 Soc. Can. Trans. Ser. 2, v.4, 1898, sec. 3, p.3-30.
- KEEFER, T.C.
 Ice floods and winter navigation of lower St. Lawrence. An abstract. Can. Soc. Civ. Engr. Trans. v.15, pt. 1, Jan.-June, 1901, p.94-95.
- KERRY, J.G.G.
 Winter temperature cycle of the St. Lawrence waters. Eng. J. v.29, n.1, Jan. 1946, p.26-34. Discussion. v.29, n.9, Sept. 1946, p.521-535.
- LEA, R.S.
 St. Lawrence power and navigation development. Can. Engr. v.47, n.9, Aug. 26, 1924, p.277-283.
- McLACHLAN, D.W.
 Ice problems in the St. Lawrence. Can. Engr. v.46, n.11, Mar.
 11, 1924, p.320.
- RUSSELL, S.R. Menace of the ice gorge. Can. Engr. v.36 n.12, Mar. 20, 1919, p.321.

PAVEMENTS, Ice Control see ICE CONTROL, ROADS AND SIDEWALKS.

PERMAFROST

- BATEMAN, J.D.
 Permafrost at Giant Yellowknife. Roy. Soc. Can. Trans. Ser. 3, v.43, 1949, sec. 3, p.7-11.
- D'APPOLONIA, E. and HARDY, R.M.
 Permanently frozen ground and foundation design. Eng. J. v.29, n.1, Jan. 1946, p.4-13.
- ECKENFELDER, G.V. and RUSSELL, B.E.

 Snare River power project. Eng. J. v.33, n.3, Mar. 1950, p.165-171.
- HARDY, R.M. and D'APPOLONIA, E.

 Permanently frozen ground and foundation design. Eng. J. v.29, n.1, Jan. 1946, p.4-13.
- RUSSELL, B.E. and ECKENFELDER, G.L. Snare River power project. Eng. J. v.33, n.3, Mar. 1950, p.165-171.

PIERS AND BRIDGES

TAUNTON, A.J.

Ice cofferdams for repair of bridge piers. Eng. J. v.33, n.7, July, 1950, p.598-601.

PIERS AND BRIDGES, ICE DAMAGE

ANONYMOUS

Ice pressure on Bow River damages bridge. A brief item in the monthly feature "News of the month." Roads and Bridges. v.83, n.4, Apr. 1945, p.86.

- LEONARD, R.W.

 Masonry pier moved by ice and replaced. Can. Engr. v.6, n.8, Dec. 1898, p.211-212 and Can. Soc. Civ. Engr. Trans. v.12, pt. 2, Oct.-Dec., 1898, p.131-133.
- PRATLEY, P.L. Collapse of Falls View bridge. Eng. J. v.21, n.8, Aug. 1938, p.375-381.

PIPES, Frost Damage see WATER SYSTEMS, FROST DAMAGE.

PLOWS

see SNOW REMOVAL EQUIPMENT.

POWER HOUSES, Ice problems see HYDRO-ELECTRIC DEVELOPMENTS, Ice Problems.

POWER PLANTS, Ice Problems see HYDRO-ELECTRIC DEVELOPMENTS, Ice Problems.

RAILROADS, WINTER MAINTENANCE

ANONYMOUS

Snow plow for electric line. Can. Engr. v.20, n.7, Feb. 16, 1911, p.304.

ALEXANDER, F.W.
Operation and maintenance of railway tracks in regions of heavy snowfall. Eng. J. v.12, n.11, Nov. 1929, p.581-588.

BROWN, C.B.

Operation and maintenance of railway tracks in districts of heavy snowfall. Eng. J. v.12, n.11, Nov. 1929, p.588-591.

JONES, C.J.
Winter troubles in electric railways. Can. Engr. v.23, n.18, Oct. 31, 1912, p.681.

LANG, J.S.

Methods of melting snow around switches. Can. Engr. v.15, n.42, Oct. 16, 1908, p.740-741.

ROAD CONSTRUCTION, Winter see WINTER CONSTRUCTION.

ROAD MAINTENANCE see SNOW REMOVAL.

ROADS, FROST ACTION

ANONYMOUS

Effect of freezing and thawing on concrete pavements. Roads and Bridges. v.84, n.1, Jan. 1946, p.65-68, p.90-100.

Frost boils and heaves. A brief article in the monthly feature "Questions and answers". Roads and Bridges. v.78, n.2, Feb. 1940, p.38, p.72.

How can frost boils be prevented? Roads and Bridges. v.80, n.11, Nov. 1942, p.26, p.46.

Lessons from frost damage to roads. Roads and Bridges. v.80, n.2, Feb. 1942, p.100.

Mechanics of frost heaving. Roads and Bridges. v.81, n.5, May, 1943, p.84-85.

Soil freezing and frost heaving on roads. Can. Engr. v.71, n.2, July 14, 1936, p.16.

What steps are suggested to prevent "bumps" in pavement during the late winter and spring? A reference to frost heaving. Answers to question in the monthly feature, "Round-table conference". Roads and Bridges. v.79, n.3, Mar. 1941, p.37.

BUETEAU, W.C.

Effect of frost action on highways. Can. Engr. v.58, n.16, Apr. 22, 1930, p.511-512.

HARDY, R.M.

Research on frost action in soils. Roads and Bridges. v.84, n.9, Sept. 1946, p.74-76, p.102.

HIGHWAY RESEARCH BOARD

Preventing damage by frost. Short reference to an outline of procedure for practical field tests issued by the Committee on the treatment of subgrade soils with calcium chloride to prevent detrimental frost action of the Highway Research Board. Roads and Bridges. v.82, n.9, Sept. 1944, p.123.

JOHNSON, A.W.

Frost action in subgrades and bases. Roads and Bridges. v.85, n.9, Sept. 1947, p.104-110, p.146-150.

SMITH, H.R.

Controlling frost effects on roads with calcium chloride.

Roads and Construction. v.88, n.12, Dec. 1950, p.85-86, p.106108.

SMITH, H.W.

Frost damage to sealed surfaces. Paper in New Zealand Institution of Engineers. Proceedings. 1946. Roads and Bridges. v.85, n.5, Aug. 1947, p.110-112.

ROADS, ICE CONTROL, ROADS AND SIDEWALKS.

ROTARY SNOW PLOWS see SNOW REMOVAL EQUIPMENT.

RUNOFF

FARROW, R.C. Snow surveys. Eng. J. v.21, n.10, Oct. 1938, p.451-455.

HOYT, W.C.

Methods of estimating stream flow when streams are frozen.

Can. Engr. v.24, n.18, May 1, 1913, p.656.

TAYLOR, J.C.D.

Spring runoff - its cause and intensity. Can. Engr. v.47, n.4, July 22, 1924, p.169-174.

RUNWAYS, Winter Maintenance see AIRPORTS, Winter Maintenance.

SCRAPERS see SNOW REMOVAL EQUIPMENT.

SEWERAGE SYSTEMS, Cold Weather Operation see WATER SYSTEMS, FROST DAMAGE.

SIDEWALKS, Ice Control see ICE CONTROL, ROADS AND SIDEWALKS.

SKATING RINKS, Snow Loads see SNOW LOAD MEASUREMENT.

SNOW BLOWERS SOO SNOW REMOVAL EQUIPMENT.

SNOW CLEARING see SNOW REMOVAL, Winter Road Maintenance.

SNOW DRIFTS see SNOW REMOVAL, Winter Road Maintenance.
DRIFT PREVENTION.

SNOW FENCES see DRIFT PREVENTION.

SNOW, FERTILIZING VALUE see SNOW, PROPERTIES.

SNOW HEDGES see DRIFT PREVENTION.

SNOW LOAD, MEASUREMENT

ANONYMOUS
Snow loads on skating rinks. Can. Engr. v.28, n.6, Feb. 11, 1915, p.249.

HORTON, R.E.

Measurement of snow. Can. Engr. v.36, n.18, May 1, 1919, p.426-427.

LEARNED, C.E.

Calculating weight of drifted snow in the Rockies. Can.

Engr. v.72, n.12, Mar. 23, 1937, p.12.

SNOW PROPERTIES

MIDDLETON, W.E.K.
Colours of snow-fields in sunlight. Roy. Soc. Can. Trans.
Ser. 3, v.37, 1943, sec. 3, p.39-43.

SHUTT, F.T. Fertilizing value of snow. Roy. Soc. Can. Trans. Ser. 3, v.l, 1907, sec. 3, p.35-38.

SHUTT, F.T.

Nitrogen compounds in rain and snow. Roy. Soc. Can. Trans.
Ser. 3, v.2, 1908, sec. 3, p.181-186.

SHUTT, F.T.

Nitrogen compounds in rain and snow. Roy. Soc. Can. Trans.

Ser. 3, v.4, 1910, sec. 3, p.55-59.

SHUTT, F.T.

Nitrogen compounds in rain and snow. Roy. Soc. Can. Trans.

Ser. 3, v.8, 1914, sec. 3, p.83-87.

SHUTT, F.T.

Nitrogen compounds in rain and snow, Roy. Soc. Can. Trans.

Ser. 3, v.11, 1917, sec. 3, p.63-71.

SHUTT, F.T.

Nitrogen compounds in rain and snow. Roy. Soc. Can. Trans.
Ser. 3, v.19, 1925, sec. 3, p.1-9.

SNOW REMOVAL

see SNOW REMOVAL, ECONOMICS.
SNOW REMOVAL EQUIPMENT.
SNOW REMOVAL, URBAN.
SNOW REMOVAL, Winter Road Maintenance.

SNOW REMOVAL, ECONOMICS

ANONYMOUS

Cost of snow removal. A brief article in the monthly feature, "Questions and answers". Roads and Bridges. v.78, n.1, Jan. 1940, p.40.

Economics of snow removal. Roads and Bridges. v.83, n.16, Oct. 1945, p.63, p.112.

Montreal snow-removal appropriation approved. A brief entry in the monthly feature, "News of the month". Roads and Bridges. v.83, n.4, Apr. 1945, p.86.

The practical benefits of snow clearing and ice control.
Articles by officials of a number of municipalities.
Roads and Bridges. v.79, n.9, Sept. 1941, p.86, p.97.

Snow removal is profitable. Can. Engr. v.75, n.16, Oct. 18, 1938, p.18-24.

\$3,100,000 profit from plowing. Can. Engr. v.77, n.16, Oct. 18, 1939, p.12.

ANDERSON, C.S. Street-cleaning costs in winter. Water and Sewage. v.82, n.11, Nov. 1944, p.84-85.

BURTON, V.R.

Cost of snow removal in Michigan. Can. Engr. v.52, n.12,
Mar. 22, 1927, p.371-375.

- FLYNN, A. and McDONALD, D. Maintenance of winter roads and costs. Can. Engr. v.72, n.9, Mar. 2, 1937, p.47-49.
- GROFF, C.G. Alberta has winter road programme at low cost. Can. Engr. v. 70, n.2, Jan. 14, 1936, p.11.
- McDONALD, D. and FLYNN, A. Maintenance of winter roads and costs. Can. Engr. v.72, n.9, Mar. 2. 1937. p.47-49.
- MOORE, H.J. Hedges reduce snow-plowing costs. Roads and Bridges. v.83, n.5, May, 1945, p.64-66.
- RICHARDS, H.F. Methods and cost of snow removal. Can. Engr. v. 34, n. 15, Apr. 11, 1918, p.323-327.

SNOW REMOVAL EQUIPMENT

ANONYMOUS

Army and airforce test Canadian snow blowers. Roads and Bridges. v.80, n.3, Mar. 1942, p.36-38, p.58-60.

Importance of equipment maintenance in the work of keeping roads open continuously during the winter. Roads and Bridges. v.79, n.9, Sept. 1941, p.89.

Increasing snowploughing efficiency. Roads and Bridges. v. 82,

n.1, Jan. 1944, p.54, p.72.

Keep up-to-date on modern snow removal mechanized equipment for 1941-42. Group of articles by representatives of manufacturing firms. Roads and Bridges. v.79, n.9, Sept. 1941, p.55-59, p.92-96.

New snow removal equipment. Can. Engr. v.77, n.16, Oct. 17, 1939, p.19-32.

A new type of snow plow. Can. Engr. v.15, n.18, May 1, 1908, p.307-308.

Organization and proper equipment are requisites of efficient winter maintenance. Roads and Bridges. v.78, n.10, Oct. 1940, p.28.

Propulsion and auxiliary machinery "wind" class ice-breakers. Eng. J. v.33, n.4, Apr. 1950, p.271-275.

Rotary snow plow. Can. Engr. v.34, n.23, June 6, 1918, p.505-507.

Should mun cipalities own or rent snow removal equipment? Answers to question in the monthly feature, "Round-table conference". Roads and Bridges. v.78, n.2, Feb. 1940, p.27-28, p.70.

Snow plow for electric line. Can. Engr. v.20, n.7, Feb. 16, 1911, p.304.

ANONYMOUS

Snow-removal equipment in the R.C.A.F. Roads and Bridges. v.81, n.10, Oct. 1943, p.40-41, p.116-118.

Symposium on equipment for winter road maintenance. Eighteen county engineers give their views on the best way to remove snow. Roads and Bridges. v.81, n.10, Oct. 1943, p.48-50, p.98-105.

Thirty roto wings and offset plows for R.C.A.F. airports. Roads and Bridges. v.80, n.9, Sept. 1942, p.38, p.86.

BARBOUR, A.W.

Standardized equipment for summer and winter in New Brunswick's maintenance policy. Roads and Bridges. v.81, n.10, Oct. 1943, p.44.

BERGERON, A.

Snow-lowers extensively used in the province of Quebec. Roads and Bridges. v.81, n.10, Oct. 1943, p.39, p.120-121.

BURRIDGE, A.L.

Michigan counties use underbody scrapers for secondary road maintenance. Roads and Bridges. v.84, n.5, May 1946, p.86-88.

CLARKE, W.A.

Pooling snow-clearing equipment. Roads and Bridges. v.83, n.3, Mar. 1945, p.119, p.146-148.

HARISON, W.M.

Snow removal equipment tested during the summer months. Can. Engr. v.63, n.19, Nov. 8, 1932, p.24.

KER. M.F.

What constitutes "adequate" snow-cleaning equipment? Roads and Bridges. v.83, n.3, Mar. 1945, p.162-163.

MOTL, C.L.

Selection of equipment for snow removal and ice control. Roads and Bridges. v.80, n.10, Oct. 1942, p.41-42, p.86-90.

PATTERSON, T.R.

Equipment for snow removal. Roads and Bridges. v.83, n.3, Mar. 1945, p.160-161.

VAUGHAN, H.H.

Rotary snow plows. Can. Soc. Civ. Engr. Trans. v.26, pt. 2, Oct.-Dec., 1912, p. 348-357.

SNOW REMOVAL, URBAN

ANONYMOUS

Snow handling policy and practice in Canadian towns and cities.
A supplement to the article in the September issue entitled "Winter maintenance of urban streets". Roads and Bridges.
v.79, n.11, Nov. 1941, p.27-28, p.62-68.

ANONYMOUS

Snow removal from city streets - methods and costs of winter maintenance in typical Canadian municipalities. Roads and Bridges. v.80, n.2, Feb. 1942, p.103.

Snow removal methods in Stratford. Letter to the editor.

Roads and Bridges. v.80, n.4, Apr. 1942, p.70.
Symposium on sidewalk snow clearing. Roads and Bridges. v.86, n.2, Feb. 1948, p.70-71, p.129-136.

Winter maintenance of urban streets in Canadian municipalities. Articles by representatives of various towns and cities. Roads and Bridges. v. 79, n. 9, Sept. 1941, p. 64-65, p. 76, p.108-109, p.112-113.

ANDERSON. C.S.

Street-cleaning costs in winter. Roads and Bridges. v.83, n.1, Jan. 1945, p.122-123, p.126-127.

ASKWITH, F.C.

how Ottawa handles snow problem. Can. Engr. v.77, n.16, Oct. 17, 1939, p.40.

BRADLEY, H.D.

Municipal and street railway authorities co-operate in snowclearing. Roads and Bridges. v.85, n.12, Dec. 1947, p.62-65.

BRADLEY, H.D.

Street cleaning and snow removal in the city of Toronto. Roads and Bridges. v.87, n.8, Aug. 1949, p.53-56, p.108-110.

BRADLEY, H.D.

Toronto's organization for snow-clearing. Roads and Bridges. v.79, n.9, Sept. 1941, p.60-62, p.118.

BROSSEAU, J.

Mechanized snow removal in the city of Montreal. Roads and Bridges. v.79, n.9, Sept. 1941, p.42-43, p.118.

DAWSON, H.D.

Winter street maintenance in Nelson. Letter to the editor. Roads and Bridges. v.80, n.4, Apr. 1942, p.70.

GIBEAU, H.A.

Montreal's snow removal method. Roads and Bridges. v. 84, n.4, Apr. 1946, p.90-91, p.159-165.

GREENE, H.S.

Removing snow in cities by machinery. Can. Engr. v.55, n.25, Dec. 18, 1928, p.791-793.

HAY, A.K.

A short paragraph on snow-clearing difficulties in an article on "Improvements to Ottawa roads". Roads and Bridges. v.79, n.4, Apr. 1941, p.24, p.81.

- HUNTER, L.M.
 Snow clearing and removal in Ottawa. Can. Engr. v. 34, n. 7, Feb. 14, 1918, p.137-138.
- INGLIS, J.G.
 Transportation commission's responsibilities. Snow-clearing by T.T.C. Roads and Bridges. v.85, n.12, Dec. 1947, p.65-66, p.109-112.
- LeBLANC, C.J.

 Snow removal problem in Montreal. Can. Engr. v.52, n.11, Mar. 15, 1927, p.355-356.
- MERCIER, P.E. Snow removal in Montreal. Can. Engr. v.31, n.4, July 27, 1916, p.71-72.
- NORTON, G.H.
 Street cleaning, refuse disposal and snow removal. Can. Engr.
 v.38, n.5, Jan. 29, 1920, p.177.
- SHEARER, J.L.
 Snow-plowing an art, not a science, in the Ottawa district.
 Roads and Bridges. v.85, n.2, Feb. 1947, p.68, p.105-106.
- WARNER, C.P.
 Detroit's "Loop" always kept clean. Can. Engr. v.77, n.16,
 Oct. 17, 1939, p.34.

SNOW REMOVAL, Winter Road Maintenance

ANONYMOUS

Concentrated attack on snowbound roads. Roads and Bridges. v.86, n.1, Jan. 1948, p.69, p.97-99.

County organization for winter road maintenance. Roads and Bridges. v.78, n.10, Oct. 1940, p.33, p.120.

Highway department's new winter service. A brief editorial comment. Roads and Bridges. v.86, n.1, Jan. 1948, p.51, p.88.

Increasing demand for winter roads. A brief editorial comment. Roads and Bridges. v. 78, n. 10, Oct. 1940, p. 17.

Laval University now studying snow removal. Roads and Bridges.

v.86, n.2, Feb. 1948, p.58.
Lessons of the "Big Storm". Adequate organization and ample equipment are essential to keep roads open. Roads and Bridges. v.83, n.2, Feb. 1945, p.57-59.

New method of snow removal. Can. Engr. v. 38, n.19, May 6, 1920, p.437-438.

ANONYMOUS

Nova Scotia snow removal. A brief entry in the monthly feature "News of the month", Roads and Bridges. v.78, n.3, Mar. 1940. p.34.

Principles of winter road maintenance. Roads and Bridges. v.80, n.10, Oct. 1942, p.36-38, p.82.

Recommendations for winter road maintenance and types of

equipment. Can. Engr. v.63, n.19, Nov. 8, 1932, p.19-20. Snow, an all year round problem. Can. Engr. v.77, n.16, Oct. 17, 1939, p.13.

Snow can silence our guns. A brief editorial comment dealing with snow removal and winter maintenance of roads. Roads and Bridges. v.79, n.9, Sept. 1941, p.23.

Snow drifts 20 ft. deep isolate Ontario towns for week.

Roads and Bridges. v.85, n.3, Mar. 1947, p.84-88, p.134-138.

Snow removal and winter road maintenance in British Columbia. Can. Engr. v.69, n.23, Dec. 3, 1935, p.5-6.

Snow removal policies and methods of the provincial highways departments. Roads and Bridges. v.79, n.9, Sept. 1941, p.78-79.

When should snow removal work be started - as soon as storm commences or after it has subsided? Answers to question in the monthly feature "Round-table conference". Roads and Bridges. v. 78, n.1, Jan. 1940, p.29-30.

Winter maintenance by snow-plowing associations. Experience of three counties in Ontario. Roads and Bridges. v.81,

n.10, Oct. 1943, p.47, p.94.
Winter maintenance practice on Ontario highways. Roads and

Bridges. v.84, n.11, Nov. 1946, p.70-72, p.120-122.
Winter road maintenance as related to Canada's war effort.
Roads and Bridges. v.79, n.9, Sept. 1941, p.38, p.96.

Winter road maintenance improved by telephone service. Roads and Bridges. v.86, n.2, Feb. 1948, p.65-69, p.123-124.

Winter road maintenances in Ontario counties. Can. Engr. v.71, n.18, Nov. 3, 1936, p.13-16.

ASKWITH. F.C.

When should snow removal work be started - as soon as the storm commences or after it has subsided? Reference to the question selected for "Round-table conference" in January issue of Roads and Bridges. Roads and Bridges. v.78, n.2, Feb. 1940, p.37, p.56, p.72.

BERGERON, A.
Snow removal in the province of Quebec. Can. Engr. v.69, n.19, Nov. 5, 1935, p.6.

BERGERON, A.
Winter maintenance of roads in province of Quebec. Can. Engr. v.63, n.19, Nov. 8, 1932, p.13-16.

- BLANCHARD, A.B.

 Maintenance of highways in winter (Nova Scotia). Can. Engr.
 v.73, n.16, Oct. 19, 1937, p.11-12.
- BOUCHARD, J.

 When should snow removal work be started as soon as the storm commences or after it has subsided? Reference to the question selected for "Round-table conference" in January issue of Roads and Bridges. Roads and Bridges. v. 78, n. 2, Feb. 1940, p. 37, p. 56, p. 72.
- BURTON, V.R.

 Maintenance of highways in winter. Can. Engr. v.57, n.14,
 Oct. 1, 1929, p.155-159.
- BURTON, V.R.

 Snow removal problems in Michigan. Can. Engr. v.54, n.17,

 Apr. 24, 1928, p.476-478.
- CARREL, F. Keeping highways open in winter. Can. Engr. v. 36, n. 22, May 29, 1919, p. 496-497.
- CUMMINGS, A.
 Plows keep open Crow's Nest Pass highway. Can. Engr. v.66, n.18, May 1934, p.17-18.
- Variation of climate adds to snow removal problems. Roads and Bridges. v.81, n.10, Oct. 1943, p.42, p.122.
- DOWNEY, B.R.

 Operating an information service on winter road conditions.
 Roads and Bridges. v.80, n.10, Oct. 1942, p.118, p.122-123.
- FLINT, H.R.

 The second winter's experience on the Alaska highway.

 Organization for combating snow and ice. Roads and Bridges.

 v.82, n.7, July 1944, p.41-44, p.79.
- FRAZER, A. Maintaining winter roads in Quebec. Can. Engr. v.59, n.5, July 15, 1930, p.150-151.
- GRATTAN, A.

 Maintenance of winter roads in Quebec. Can. Engr. v.73, n.12, Sept. 21, 1937, p.108-110.
- GREIG, G.G.
 Winter road maintenance in Ontario. Can. Engr. v.59, n.13, Sept. 23, 1930, p.134-135.
- GRIMMER, S.K.
 Winter operating problems. Can. Engr. v.77, n.13, Sept. 26, 1939, p.2-3.

- HAY, A.K.

 Keeping roads open for winter. Can. Engr. v.68, n.9, Feb. 26, 1935, p.80-82.
- HAY, A.K.

 Methods of snow removal from highways. Can. Engr. v.62, n.14, Apr. 5, 1932, p.11.
- HAY, A.K.

 Personnel problems in winter road maintenance. Roads and Bridges.
 v.79, n.9, Sept. 1941, p.40, p.110.
- HAY, A.K.
 Some essential fact rs of maintaining roads in winter. Can.
 Engr. v.76, n.9, Feb. 28, 1939, p.54-56.
- HUTCHESON, W.B.
 Winter maintenance of northern roads. Roads and Bridges. V.78, n.10, Oct. 1940, p.34-35, p.90.
- INNES, J.S.

 Keeping roads open in winter. Can. Engr. v.58, n.14, Apr. 8, 1930, p.477.
- ISABELLA, N.M.

 Effect of winter weather on roads. Can. Engr. v.51, n.26, Dec. 28, 1926, p.751.
- JOHNSTON, T.
 Trend in snow plowing. Can. Engr. v.77, n.16, Oct. 17, 1939, p.8-11.
- LALONDE, A. Winter roads. Can. Engr. v. 36, n. 23, June 5, 1919, p. 15-516.
- LANGLOIS, W.L.

 When should snow removal work be started as soon as the storm commences or after it has subsided? Reference to the question selected for "Round-table conference" in January issue of Roads and Bridges. Roads and Bridges. v. 78, n. 2, Feb. 1940, p. 37, p. 56, p. 72.
- McCOLOUGH, R.W.
 Winter maintenance in Nova Scotia. Roads and Bridg s. v.87, n.10, Oct. 1949, p.92, p.114-118.
- M cMILLAN, L.B. Winter roads in P.E.I. Roads and Bridges. V.79, n.1, Jan. 1941, p.23.
- McNAMEE, G.A.
 Winter maintenance. Roads and Bridges. v.83, n.10, Oct. 945, p.1 7-138.

- MARTINEAU, J.O.

 Maintaining winter roads in the province of Quebec. Can. Engr.
 v. 67, n. 20, Nov. 13, 1934, p. 23-24.
- MELANSON, W.A.S.
 Winter road maintenance. Discussion of U.B. Steinbaugh's paper at the annual convention of the Canalian Good Roads Association. Can. Engr. v.75, n.15, Oct. 11, 1938, p.20-34.
- MILLER, J.D.
 Principles of winter road maintenance. Roads and Bridges. v.80, n.10, Oct. 1942, p.36-38, p.82.
- MURRAY, E.H.

 Public service aspects of winter maintenance. Roads and Bridges.
 v.81, n.10, Oct. 1943, p.37-38, p.106-108.
- NEISS, G.
 Caution plowing ahead. Can. Engr. v.75, n.16, Oct. 18, 1938, p.8-16.
- PARSONS, R.H.

 When should snow removal work be started as soon as the storm commences or after it has subsided? Reference to the question selected for "Round-table conference" in January issue of Roads and Bridges. Roads and Bridges. v.78, n.2, Feb. 1940, p.37, p.56, p.72.
- PATTERSON, J.
 Can the meteorological service help to improve winter road maintenance? Roads and Bridges. v.80, n.10, Oct. 1942, p.39-40, p.92-94.
- PERRIE, W.W.

 War conditions increase demand for snow removal in the province of Saskatchewan, Roads and Bridges. v.81, n.10, Oct. 1943, p.45-46, p.94.
- POWELL, N.L. Snow removal on highways. Can. Engr. v.72, n.9, Mar. 2, 1937, p.130.
- ROBBINS, C.A.

 Maintenance of winter roads in the province of Ontario. Can.

 Engr. v.69, n.19, Nov. 5, 1935, p.7-8.
- ROBBINS, C.A.
 Winter maintenance of Ontario highways. Can. Engr. v.71, n.18, Nov. 3, 1936, p.7-12.
- ROBBINS, C.A.
 Winter maintenance of public highways. Can. Engr. v.63, n.12, Sept. 20, 1932, p.109-110.
- ROSE, H.C.

 Maintenance of highways in winter. Can. Engr. v.70, n.18, May 5, 1936, p.9-10.

- ROSENWALD, W.F.
 - Maintenance of winter highways and discussion. Can. Engr. v.55, n.15, Oct. 9, 1928, p.1048-104F.
- RUTHERFORD, F.M.

Snow removal methods on highways. Can. Engr. v.60, n.9, Mar. 3, 1931, p.87.

SARGENT, H.E.

Vermont's experience with snow removal and ice control. Roads and Bridges. v.86, n.10, Oct. 1948, p.61, p.94-102.

SAUNDERS, A.L.

Organizing work on winter roads in Ontario. Can. Engr. v.69, n.19, Nov. 5, 1935, p.3-15.

SAUNDERS, W.L.

Keeping the King's highways open in Ontario. Can. Engr. v.65, n.24, Dec. 12, 1933, p.5-9.

SAWYER, K.I.

Preparing highway organizations for snow storms. Can. Engr. v.71, n.18, Nov. 3, 1936, p.20-22.

SMITH, A.A.

Maintenance of highways in winter. Discussion of the paper by V.R. Burton. p.155-159. Can. Engr. v.57, n.14, Oct. 1, 1929, p.159-160.

SMITH, A.A.

When should snow removal work be started - as soon as the storm commences or after it has subsided? Reference to the question selected for "Round-table conference" in January issue of Roads and Bridges. Roads and Bridges. v.78, n.2, Feb. 1940, p.37, p.56, p.72.

STEINBAUGH, V.B.

Winter road maintenance. Can. Engr. v.75, n.11, Sept. 13, 1938, p.52-56.

STEINBURG, S.S.

Keeping roads open in winter. Can. Engr. v.53, n.23, Dec. 6, 1927, p.586.

STEPHENSON, G.E.

Snowplowing program in Bruce county. Roads and Bridges. v.80, n.10, Oct. 1942, p.106.

TURNBULL, J.T.

Some winter roads kept open in New Brunswick. Can. Engr. v.69, n.19, Nov. 5, 1935, p.5.

UPHAM, C.M.

Winter maintenance. Reference to a paper by C.M. Upham. Roads and Bridges. v.78, n.11, Nov. 1940, p.67-68.

WALTERS, P.R.

Removal of snow from elevated highway structures. Roads and Bridges v.83, n.9, Sept. 1945, p. 150.

WICKWIRE, J.L.

Snow-clearing in Nova Scotia. Roads and Bridges. v.81, n.10, Oct. 1943, p.86.

WILLIAMS, G.A.

Winter maintenance problems on the Alaska highway. Roads and Bridges. v.81, n.11, Nov. 1943, p.27-30, p.58-59.

see also

DRIFT PREVENTION.
AIRPORTS, Winter Mainte ance.
ICE CONTROL, ROADS AND SIDEWALKS.
SNOW REMOVAL, URBAN.
SNOW REMOVAL, ECONOMICS.
SNOW REMOVAL, EQUIPMENT.

SNOW SLIDES

CUNNINGHAM, G.C.

Snow slides in the Selkirk mountains. Can. Soc. Civ. Engr. Trans. v.l, pt. 2, Oct.-Dec., 1887, p. 18-31.

SNOW SURVEYS see RUNOFF.

SNOWFALL STATISTICS

ANONYMOUS

Snowfall statistics for Canada. Roads and Bridges. v.85, n.1, Jan. 1947, p.97-98.

STREAM FLOW see RUNOFF.

STREETS, ICE CONTROL see ICE CONTROL, ROADS AND SIDEWALKS.

THERMAL SNOW CLEARING see SNOW REMOVAL, Winter Road Maintenance. ICE CONTROL, ROADS AND SIDEWALKS.

TREES, ICING see ICING, Trees and Wires.

VEHICLES, FOR OPERATION ON SNOW

ANONYMOUS

Locomotives of the snow roads. Opening Canada's north country by means of tractor-trains. Roads and Bridges. v.79, n.9, Sept. 1941 p.90.

Sept. 1941 p.90. New snow motor in service. Can. Engr. v.49, n.25, Dec. 22, 1925, p.661.

Winter operat on of motor vehicles. Roads and Bridges. v.80, n.10, Oct.1942, p.112.

WILLIAMS, R.S.
Winter tractor haulage. Can. Engr. v.72, n.22, June 1, 1937, p.24.

WATER MAINS, FROST DAMAGE see WATER SYSTEMS, FROST DAMAGE.

WATER METERS, FROST DAMAGE see WATER SYSTEMS, FROST DAMAGE.

WATER SYSTEMS. FROST DAMAGE

ANONYMOUS

Formation of ice in water mains. Can. Engr. v.31, n.3, July 20, 1916, p.55.

; -

Fros control in wate wo ks systems. A discussion under chairmanship of W E. MacDonald at the meeting of Canadian section, A.W.W.A. Niagara Falls. Water and Dewage. v.82, n.5, May 1944, p.13 -133.

Frost amage to water mete s. A brie article in the monthly featur "Questions and answers". ater and Sewage. v.80, n.1, Jan. 1942, p.3 -31.

Protectin water mains from frost. an Engr. v.54, n.20, May 15, 1928, p.531-532.

- ANONYMOUS
 - What precautions have been exercised or what steps are being taken to minimize winter maintenance troubles in your waterworks system? Answers to question in the monthly feature "Round-table conference". Water and Sewage. v. 78, n. 12, Dec. 1940, p. 30-33.
- AUSTIN, E.T.
 Preventing hydrants from freezing. Can. Engr. v.40, n.21,
 May 26, 1921, p.513.
- BARNES, H.T.

 Production of ring ice or hoar frost in pipes. Roy. Soc. Can.

 Trans. Ser. 3, v.10, 1916, sec. 3, p.93-96.
- Problems involved in cold-weather operation of sewerage systems. Water and Sewage. v.79, n.11, Nov. 1941, p.13-15, p.40-41.
- BRERETON, W.P.

 Water meters damaged by frost in Winnipeg. A brief reference to the article entitled, "Frost damage to water meters" in the January issue of Water and Sewage. Water and Sewage. v.80, n.2, Feb. 1942, p.53.
- BUCHANAN, W.B. and DOBSON, W.P.

 Thawing ice in water pipes. Can. Engr. v.68, n.14, Apr. 2, 1935, p.83-86.
- DOBBIN, R.L.

 The effect of frost conditions in water works practice. Can.

 Engr. v.66, n.15, Apr. 10, 1934, p.81-86.
- DOBSON, W.P. and BUCHANAN, W.B.

 Thawing ice in water pipes. Can. Engr. v.68, n.14, Apr. 2, 1935, p.83-86.
- FINNERMAN, G.H.

 Protecting water mains against frost. Can. Engr. v.49, n.14,
 Oct. 6, 1925, p.432.
- HARRIS, R.M.
 Chlorinator operation during the winter. Water and Sewage.
 v.81, n.1, Jan. 1943, p.9-10.
- MacDONALD, W.E.
 Frost control. Reference to a report to be issued by the Canadian section of A.W.W.A. under chairmanship of W.E.
 MacDonald. Water and Sewage. v.86, n.12, Dec. 1948, p.10.
- MacDONALD, W.E.
 Unusual freezing conditions in water distribution systems.
 Can. Engr. v.66, n.17, Apr. 24, 1934, p.11-14.

NEWSOM, R.J.
Thawing frozen water mains and sewer pipes. Can. Engr. v.67, n.3, July 17, 1934, p.19-22.

WATERWORKS, FROST DAMAGE see WATER SYSTEMS, FROST DAMAGE

WINTER CONSTRUCTION

BUTLER, M.J.

Cement mortars in freezing weather. Can. Soc. Civ. Engr. Trans.
v.8, pt. 1, Jan.-June, 1894, p.177-188.

CORDULLO, F.E.
Frost troubles with compressed air apparatus. Can. Engr. v.10, n.11, Nov. 19 3, p.305.

MACATEE, W.R.

Cold-weather paving of asphaltic roads. Roads and Bridges.
v.81, n.2, Feb. 1943, p.23, p.80.

McCOY, W.J.
Obtaining concrete resistant to freezing and thawing. Roads
and Bridges. v.82, n.5, July 1944, p.48-49, p.82-85.

WINTER MAINTENANCE

see AIRPORTS, Winter Maintenance.
RAILROADS, Winter Maintenance.
SNOW REMOVAL, Winter Road Maintenance.
SNOW REMOVAL, URB N.

WIRES, ICING see ICING, Trees and Wires.

JOURNAL INDEX

CANADIAN ENGINEER

later ROADS AND BRIDGES and WATER AND SEWAGE

VOL.	DATE	TITLE
3	1895	Theories of the formation of ice. v.3, n.4, Aug. 1895, p.89-90.
5	1897	Formation and agglomeration of frazil and anchorice, by H.T. Barnes. v.5, n.1, May 1897, p.6-10.
6	1898	Masonry pier moved by ice and replaced. v.6, n.8, Dec. 1898, p.211-212.
6	1899	Frazil ice in Lachine rapids. v.6, n.10, Feb. 1899, p.273.
7	1899	Ice breaking. v.7, n.6, Oct. 1899, p.163-164.
8	1901	Ice breaking steamers on the St. Lawrence, by J. Kennedy. v.8, n.13, May 1901, p.299-300.
10	1903	A vessel for north polar navigation and study, v.10, n.2, Feb. 1903, p.40.
10	1903	Weight of ice laden trees. v.10, n.2, Feb. 1903, p.44.
10	1903	The weight of ice laden telegraph and other wires. v.10, n.4, April, 1903, p.100.
10	1903	Weight of ice on wires. v.10, n.5, May 1903, p.147.
10	1903	Frost troubles with compressed air apparatus, by F.E. Cordullo. v.10, n.11, Nov. 1903, p.305.
11	1904	A remedy for frazil ice. Reference to R.W. Leonard's paper read at Canadian society of civil engineering autumn meeting. v.ll, n.ll, Nov. 1904, p.348.
12	1905	Frazil ice. Discussion at Engineer's club meeting. Toronto. Dec. 8, 1904. v.12, n.1, Jan. 1905, p.3.
12	1905	Frazil ice, by H.T. Barnes. v.12, n.2, Feb. 1905, p.46-47.

VOL.	DATE	TITLE
12	1905	Frazil ice, by J.S. Fielding. Letter to the editor. v.12, n.3, Mar. 1905, p.93-94.
12	1905	Formation of anchor ice and precise temperature measurements, by H.T. Barnes. v.12, n.6, June 1905, p.167-168, p.202.
14	1907	The Canadian government ice-breaker, "Lady Grey". v.14, n.4, Apr. 5, 1907, p.150.
14	1907	Frazil and anchor ice, by J. Murphy. v.14, n.10, Oct. 4, 1907, p.369-372.
15	1908	Methods of melting snow around switches, by J. S. Land. v.15, n.42, Oct. 16, 1908, p.740-741.
15	1908	A new type of snow plow. v.15, n.18, May 1, 1908, p.307-308.
15	1908	Ice troubles in hydraulic power work, and methods of overcoming them, by J. Murphy. Address presented to Applied Science Undergrad Society of McGill. Feb. 26, 1908, v.15, n.18, May 1, 1908, p.318-322.
17	1909	Frazil. v.17, n.24, Dec. 17, 1909, p.666, p.674.
17	1909	Ice trouble in hydraulic power work, by J. Murphy. A reference. v.17, n.24, Dec. 17, 1909, p.674.
18	1910	Ice trouble at Hull electric power house, v.18, n.3, Jan. 21, 1910, p.64.
20	1911	Snow plow for electric line. v. 20, n.9, Feb. 16, 1911, p.304.
20	1911	Ice formation on the St. Lawrence. Effect of the sun on general ice conditions. Absorption of sun's heat in the winter. v.20, n.23, June 8, 1911, p.789-792.
21	1911	Provision for uplift and ice pressure in designing masonry dams. v.21, n.26, Dec. 28, 1911, p.736.
22	1912	Shutdowns due to ice troubles, by H.T. Barnes. Letter to the editor. v.22, n.3, Jan. 18, 1912, p.186-187.
22	1912	Iceberg detection. v.22, n.16, Apr. 18, 1912,. p.545.

VOL.	DATE	TITLE
22	1912	The influence of ice on water power development, by H.T. Barnes. v.22, n.26, June 27, 1912, p.862-864.
23	1912	Ice troubles at Buffalo, by H.L. Lyon. v.23, n.1, July 4, 1912, p.126.
23	1912	Winter troubles in electric railways, by C.J. Jones. v.23, n.18, Oct. 31, 1912, p.681.
23	1912	The rise of temperature associated with melting of icebergs, by H.T. Barnes. v.23, n.25, Dec. 19, 1912, p.887-888.
24	1913	Methods of estimating stream flow when streams are frozen, by W.C. Hoyt. v.24, n.18, May 1, 1913, p.656.
26	1914	An ice cofferdam. v.26, n.23, June 4, 1914, p. 817.
27	1914	Ice troubles in Hydro-electric plants. v.27, n.21, Nov. 26, 1914, p.693.
27	1914	Crushing strength of ice. v.27, n.23, Dec. 10, 1914, p.743.
28	1915	Snow loads on skating rinks. v.28, n.6, Feb. 11, 1915, p.249.
30	1916	Ice conditions in Hudson Bay and Strait. v.30, n.8, Feb. 24, 1916, p.289.
31	1916	Formation of ice in water mains. v.31, n.3, July 20, 1916, p.55.
31	1916	Snow removal in Montreal, by P.E. Mercier. v.31, n.4, July 27, 1916, p.71-72.
34	1918	Ice diversion, hydraulic models and hydraulic similarity, by B.F. Grant. v.34, n.3, Jan. 17, 1918, p.55-58. Discussion. v.34, n.15, Apr. 11, 1918, p.323-327.
34	1918	Snow clearing and removal in Ottawa, by L.M. Hunter. v.34, n.7, Feb. 14, 1918, p.137-138.
34	1918	Methods and cost of snow removal, by H.F. Richards. v.34, n.15, Apr. 11, 1918, p.323-327.
34	1918	Rotary snow plow, v. 34, n. 23, June 6, 1918, p. 505-507.

VOL.	DATE	TITLE
36	1919	Design of Hydro-electric plants for combating ice troubles, by R.M. Wilson. v.36, n.8, Feb. 20, 1919, p.237-242.
36	1919	Menace of the ice gorge, by S.R. Russell. v.36, n.12, Mar. 20, 1919, p.321.
36	1919	Measurement of snow, by R.E. Horton. v.36, n.18, May 1, 1919, p.426-427.
36	1919	Keeping highways open in winter, by F. Carrel. v.36, n.22, May 29, 1919, p.496-497.
36	1919	Winter roads, by A. Lalonde. v.36, n.23, June 5, 1919, p.515-516.
38	1920	Street cleaning, refuse disposal and snow removal, by G.H. Norton. v.38, n.5, Jan. 29, 1920, p.177.
38	1920	New method of snow removal. v.38, n.19, May 6, 1920, p.437-438.
39	1920	Ice diversion for St. Lawrence River power company, by B.F. Groat. v.39, n.21, Nov. 25, 1920, p. 545-552.
40	1921	Ice formation and its prevention, by J. Murphy. v.40, n.10, Mar. 10, 1921, p.291-292.
40	1921	Preventing hydrants from freezing, by E.T. Austin. v.40, n.21, May 26, 1921, p.513.
枡	1923	Guniting steel penstacks to eliminate trouble due to ice formation, by J.A. McCrary. v.44, n.2, Jan. 9, 1923, p.125-126.
45	1923	Reducing ice pressures with compressed air, by R.G. Skerret. v.45, n.5, July 31, 1923, p.181-185.
46	1924	Ice problems in the St. Lawrence, by D.W. McLachlan. v.46, n.11, Mar. 11, 1924, p.320.
47	1924	Spring runoff - its cause and intensity, by J.C.D. Taylor. v.47, n.4, July 22, 1924, p.169-174.
47	1924	St. Lawrence power and navigation development, by R.S. Lea. v.47, n.9, Aug. 26, 1924, p.277-283.

VOL.	DATE	TITLE
47	1924	Ice problems at Hydro-electric plants, by T.G. Hogg. v.47, n.20, Nov. 11, 1924, p.498-500.
49	1925	Ice troubles in Swedish power plants, by A.F. Samsice. v.49, n.7, Aug. 18, 1925, p.231-232.
49	1925	Protecting water mains against frost, by G.H. innerman. v.49, n.14, Oct. 6, 1925, p.432.
49	1925	New snow motor in service. v.49, n.25, Dec. 22, 1925, p.661.
50	1926	Ice conditions in the St. Lawrence river, by H.T. Barnes. v.50, n.6, Feb. 9, 1926, p.207-208.
51	1926	Intakes of the Great Lakes region, by G.H. Fenkell. v.51, n.4, July 27, 1926, p.163-168.
51	1926	Effect of winter weather on roads, by N.M. Isabella. v.51, n.26, Dec. 28, 1926, p.751.
52	1927	Snow removal problem in Montreal, by C.J. LeBlanc. v.52, n.11, Mar. 15, 1927, p.355-356.
52	1927	Cost of snow removal in Michigan, by V.R. Burton. v.52, n.12, Mar. 22, 1927, p.371-375.
53	1927	Scientific methods of ice control, by H.T. Barnes. v.53, n.18, Nov. 1, 1927, p.493-494.
53	1927	Tests on shearing strength of ice, by J.F. Finlayson. v.53, n.1, July 5, 1927, p.101-103.
53	1927	Keeping roads open in winter, by S.S. Steinburg. v.53, n.23, Dec. 6, 1927, p.586.
54	1928	Snow removal problems in Michigan, by V.R. Burton. v.54, n.17, Apr. 24, 1928, p.476-478.
54	1928	Protecting water mains from frost. v.54, n.20, May 15, 1928, p.531-532.
54	1928	Uplift and ice pressure on dams. Letter to the editor. v.54, n.21, May 22, 1928, p.551.
55	1928	Maintenance of winter highways and discussion, by W.F. Rosenwald. v.55, n.15, Oct. 9, 1928, p.104B-104F.

VOL.	DATE	TITLE
55	1928	Removing snow in cities by machinery, by H.S. Greene. v.55, n.25, Dec. 18, 1928, p.791-793.
57	1929	Maintenance of highways in winter, by V.R. Burton. v.57, n.14, Oct. 1, 1929, p.155-159.
57	1929	Maintenance of highways in winter. Discussion of the paper by V.R. Burton, by A.A. Smith. v.57, n.14, Cct. 1, 1929, p.155-159.
57	1929	St. Lawrence and its ice problems, by H.T. Barnes. v.57, n.21, Nov. 19, 1929, p.738-739.
58	1930	Protecting Hydro plants from ice, by S. Mornington. v.58, n.4, Jan. 28, 1930, p.169-170.
58	1930	Formation of frazil ice, by J.S. Fielding. v.58, n.6, Feb. 11, 1930, p.217.
58	1930	Keeping roads open in winter, by J.S. Innes. v.58, n.14, April 8, 1930, p.477.
58	1930	Effect of frost action on highways, by W.C. Bueteau. v.58, n.16, April 22, 1930, p.511-512.
58	1930	Ice problems in power development, by J. Murphy. v.58, n.21, May 27, 1930, p.612.
59	1930	Maintaining winter roads in Quebec, by A. Frazer. v.59, n.5, July 15, 1930, p.150-151.
59	1930	Winter road maintenance in Ontario, by G.G. Greig. v.59, n.13, Sept. 23, 1930, p.134-135.
60	1931	Snow removal methods on highways, by F.N. Rutherford. v.60, n.9, Mar. 3, 1931, p.87.
61	1931	Ice problems at Hydro-electric plants. v.61, n.18, Nov. 3, 1931, p.15-16.
62	1932	Methods of snow removal from highways, by A.K. Hay. v.62, n.14, April 5, 1932, p.11.
63	1932	Winter maintenance of public highways, by . C.A. Robbins. v.63, n.12, Sept. 20, 1932, p.109-110.
63	1932	Winter maintenance of roads in province of Quebec, by A. Bergeron. v.63, n.19, Nov. 8, 1932, p.13-16.

VOL.	DATE	TITLE
63	1932	Recommendations for winter road maintenance and types of equipment. v.63, n.19, Nov. 8, 1932, p.19-20.
63	1932	Snow removal equipment tested during the summer months, by W.M. Harison. v.63, n.19, Nov. 8, 1932, p.24.
65	1933	Keeping the King's highways open in Ontario, by W.L. Saunders. v.65, n.24, Dec. 12, 1933, p.5-9.
66	1934	Winter maintenance and ice control on highways, by E.J. Vaughn. v.66, n.6, Feb. 6, 1934, p.10-11.
66	1934	The effect of frost conditions in water works practice, by R.L. Dobbin. v.66, n.15, Apr. 10, 1934, p.81-86.
66	1934	Unusual freezing conditions in water distributing systems, by W.E. MacDonald. v.66, n.17, April 24, 1934, p.11-14.
66	1934	Plows keep open Crow's Nest Pass highway, by A. Cummings. v.66, n.18, May 1, 1934, p.17-18.
67	1934	Thawing frozen water mains and sewer pipes, by R.J. Newsom. v.67, n.3, July 17, 1934, p.19-22.
67	1934	Snow control and treatment of icy surfaces, by A. Courchesne. v.67, n.12, Sept. 18, 1934, p.73-75.
67	1934	Winter road maintenance and drift prevention in Ontario, by C.A. Robbins. v.67, n.20, Nov. 13, 1934, p.17-19.
67	1934	Maintaining winter roads in the province of Quebec. by J.O. Martineau. v.67, n.20, Nov. 13, 1934, p.23-24.
67	1934	Snow control and treatment of icy surfaces, by J.R. Collins. v.67, n.20, Nov. 13, 1934, p.25-26.
68	1935	Keeping roads open for winter, by A.K. Hay. $v.68$, n.9, Feb. 26, 1935, p.80-82.
68	1935	Thawing ice in water pipes, by W.P. Dobson and W.B. Buchanan. v.68, n.14, April 2, 1935, p.83-86.

		= 42 =
VOL.	DATE	TITLE
69	1935	Organizing work on winter roads in Ontario, by A.L. Saunders. v. 69, n.19, Nov. 5, 1935, p.3-15.
69	1935	Some winter roads kept open in New Brunswick, by J.T. Turnbull. v.69, n.19, Nov. 5, 1935, p.5.
69	1935	Snow removal in the province of Quebec, by A. Bergeron. v.69, n.19, Nov. 5, 1935, p.6.
69	1935	Maintenance of winter roads in the province of Ontario, by C.A. Robbins. v.69, n.19, Nov. 5, 1935, p.7-8.
69	1935	Drift control of roads in winter, by A.K. Hay, v.69, n.19; Nov. 5, 1935, p.9-10.
69	1935	Ice control on streets and highways, by J.A. Knight. v.69, n.19, Nov. 5, 1935, p.12.
69	1935	Snow removal and winter road maintenance in British Columbia. v.69, n.23, Dec. 3, 1935, p.5-6.
70	1936	Alberta has winter road programme at low cost, by C.G. Groff. v.70, n.2, Jan. 14, 1936, p.11.
70	1936	Treatment of icy roads alleviates driving hazard, by R.W. Criem. v.70, n.2, Jan. 14, 1936, p.14.
70	1936	Maintenance of highways in winter, by H.C. Rose. v.70, n.18, May 5, 1935, p.9-10.
70	1936	Method of treating icy pavements. v.70, n.24, June 16, 1936, p.19.
71	1936	Soil freezing and frost heaving on roads. v.71, n.2, July 14, 1936, p.16.
71	1936	Winter maintenance of Ontario highways, by C.A. Robbins. v.71, n.18, Nov. 3, 1936, p.7-12.
71	1936	Winter road maintenances in Ontario counties, v.71, n.18, Nov. 3, 1936, p.13-16.
71	1936	Ice control on highways, by R.H. Reid. v.71, n.18, Nov. 3, 1936, p.18.
71	1936	Preparing highway organization for snow storms, by K.I. Sawyer. v.71, n.18, Nov. 3, 1936, p.20-22.

VOL	•	DATE		TITLE
72		1937		Methods of heating ice on highways (Michigan), by E.E. Blamgren. v.72, n.1, Jan. 5, 1937, p.11-12.
72		1937		Maintenance of winter roads and costs, by A. Flynn and D. McDonald. v.72, n.9, Mar. 2, 1937, p.47-49.
72		1937		Snow removal and control of icy conditions, by F.E. Wier. v.72, n.9, Mar. 2, 1937, p.116-118.
72		1937		Snow removal and control of icy conditions, by A.E. Chalmers. v.72, n.9, Mar. 2, 1937, p.126-130.
72	4	1937		Snow removal on highways, by N.L. Powell. v.72, n.9, Mar. 2, 1937, p.130.
72		1937		Snow drift control on highways, by E.A. Finney. v.72, n.10, Mar. 9, 1937, p.7-9.
72		1937		Calculating weight of drifted snow in the Rockies, by C.E. Learned. v.72, n.12, Mar. 23, 1937, p.12.
72	:	1937		Frazil ice problems in pumping stations, by R. Dorion. v.72, n.19, May 11, 1937, p.11-14.
72	!	1937		Winter tractor haulage, by R.S. Williams. v.72, n.22, June 1, 1937, p.24.
73) .	1937		Maintenance of winter roads in Quebec, by A. Grattan. v.73, n.12, Sept. 21, 1937, p.108-110.
73)	1937		Maintenance of highways in winter, (Nova Scotia), by A.B. Blanchard. v.73, n.16, Oct. 19, 1937, p.11-12.
74	ŀ	1938	×	Control of ice jams in large rivers, by W.E. Ewens. v.74, n.5, Feb. 1, 1938, p.11-13.
75		1938		Winter road maintenance, by V.B. Steinbaugh. v.75, n.11, Sept. 13, 1938, p.52-56.
75	,	1938		Winter road maintenance. Discussion of V.B. Steinbaugh's paper at the annual convention of the Canadian Good Roads Association, by W.A.S. Melanson. v.75, n.15, Oct. 11, 1938, p.20-34.
79	41	1938		Caution - plowing ahead, by G. Neiss. v.75, n.16, Oct. 18, 1938, p.8-16.

		- 111 -
VOL.	DATE	TITLE
75	1938	Theory and practice in snow fence erection, by C.A. Robbins. v.75, n.16, Oct. 18, 1938, p.16-18.
75	1938	Snow removal is profitable. v.75, n.16, Oct. 18, 1938, p.18-24.
75	1938	Snow problem at Canada's airports. v.75, n.16, Oct. 18, 1938, p.24-28.
75	1938	Calcium chloride treatment of abrasives used in ice control, by J.E. Tremoyne. v.75, n.20, Nov. 15, 1938, p.8-10.
76	1939	Some essential factors of maintaining roads in winter, by A.K. Hay. v.76, n.9, Feb. 28, 1939, p.54-56.
77	1939	Winter operating problems, by S.K. Grimmer. v.77, n.13, Sept. 26, 1939, p.2-3.
77	1939	Trend in snow plowing, by T. Johnston. v.77, n.16, Oct. 17, 1939, p.8-11.
77	1939	\$3,100,000 profit from plowing. v.77, n.16, Oct. 17, 1939, p.12.
77	1939	Snow, an all year round problem. v.77, n.16, Oct. 17, 1939, p.13.
77	1939	Skid tests show desirability of chemically treated abrasives. v.77, n.16, Oct. 17, 1939, p.13-14.
77	1939	Ice control on Ontario highways. v.77, n.16, Oct. 17, 1939, p.14.
77	1939	Snow removal at Canada's airport. v.77, n.16, Oct. 17, 1939, p.15-18.
77	1939	New snow removal equipment. v.77, n.16, Oct. 17, 1939, p.19-32.
77	1939	Detroit's "Loop" always kept clean, by C.P. Warner. v.77, n.16, Oct. 17, 1939, p.34.
77	1939	How Ottawa handles snow problem, by F.C. Askwith. v.77, n.16, Oct. 17, 1939, p.40.
77	1939	Maintaining snow covered airdromes, by A.D. McLean. v.77, n.16, Oct. 17, 1939, p.42.

VOL.	DATE	TITLE
77	1939	Winter maintenance and ice control, by J.A. Racicot. v.77, n.25, Dec. 19, 1939, p.8.

In 1940 CANADIAN ENGINEER became ROADS AND BRIDGES and WATER AND SEWAGE.

ROADS AND BRIDGES

VOL.	YEAR	TITLE
78	1940	When should snow-removal work be started - as soon as the storm commences or after it has subsided? Answers to question in the monthly feature "Round-table conference". v.78, n.1, Jan. 1940, p.29-30.
78	1940	Cost of snow removal. A brief article in the monthly feature "Questions and Answers". v.78, n.1, Jan. 1940, p.40.
78	1940	Should municipalities own or rent snow removal equipment? Answers to question in the monthly feature "Round-table conference". v.78, n.2, Feb. 1940, p.27-28, p.70.
78	1940	When should snow removal work be started - as soon as the storm commences or after it has subsided? Reference to the question selected for "Round-table conference" in Jan. issue of Roads and Bridges. Articles by F.C. Askwith, J. Bouchard, W.L. Langlois, R.H. Parsons, and A.A. Smith. v.78, n.2, Feb. 1940, p.37, p.56, p.72.
78	1940	Frost boils and heaves. A brief article in the monthly feature "Questions and Answers". v.78, n.2, Feb. 1940, p.38, p.72.
78	1940	Nova Scotia snow removal. A brief entry in the monthly feature "News of the month". v.78, n.3, Mar. 1940, p.34.
78	1940	Snow drift control by highway design methods. v.78, n.9, Sept. 1940, p.70.
78	1940	Increasing demand for winter roads. A brief editorial comment. v.78, n.10, Oct. 1940, p.17.
78	1940	Organization and proper equipment are requisites of efficient winter maintenance. v.78, n.10, Oct. 1940, p.28.
78	1940	Snow handling methods on Canadian airports. v.78, n.10, Oct. 1940, p.30-32.
78	1940	County organization for winter road maintenance. v.78, n.10, Oct. 1940, p.33, p.120.
78	1940	Winter maintenance of northern roads, by W.B. Hutcheson. v.78, n.10, Oct. 1940, p.34-35, p.90.

VOL.	YEAR	TITLE
78	1940	Winter problems on divided highways. Snow removal and ice control on Queen Elizabeth way, by T.A. McNeill. v.78, n.10, Oct. 1940, p.36, p.102.
78	1940	Location of snow fence. A brief article in the monthly feature Questions and Answers". v.78, n.10, Oct. 1940, p.48.
78	1940	Winter maintenance. Reference to a paper by C.M. Upham. v.78, n.11, Nov. 1940, p.67-68.
78	1940	Mechanized warfare against snow and ice. A brief editorial comment. v.78, n.12, Dec. 1940, p.13.
78	1940	Wood-lath snow fence. A brief entry in the month- ly feature, "Questions and Answers". v.78, n.12, Dec. 1940, p.42.
79	1941	Winter roads in P.E.I., by L.B. MacMillan. v.79, n.l, Jan. 1941, p.23.
79	1941	What policy is followed in your municipality with regard to snow and ice removal from sidewalks? Answers to question in the monthly feature "Round-table conference". v.79, n.2, Feb. 1941, p.27.
79	1941	What steps are suggested to prevent "bumps" in pavement during the late winter and spring? A reference to frost heaving. v.79, n.3, Mar. 1941, p.37.
79.	1941	A short paragraph on snow-clearing difficulties in an article on Improvements to Ottawa roads, by A.K. Hay. v.79, n.4, Apr. 1941, p.24, p.81.
79	1941	Snow can silence our guns. A brief editorial comment dealing with snow removal and winter maintenance of roads. v.79, n.9, Sept. 1941, p.23.
79	1941	Winter road maintenance as related to Canada's war effort. v.79, n.9, Sept. 1941, p.38, p.96.
79	1941	Personnel problems in winter road maintenance, by A.K. Hay. v.79, n.9, Sept. 1941, p.40, p.110.
79	1941	Mechanized snow removal in the city of Montreal, by J. Brosseau. v.79, n.9, Sept. 1941, p.42-43, p.118.

VOL.	YEAR	TITLE
79	1941	Keep up-to-date on modern snow removal mechanized equipment for 1941-42. Group of articles by representatives of manufacturing firms. v.79, n.9, Sept. 1941, p.55-59, p.92-96.
79	1941	Toronto's organization for snow-clearing, by H.D. Bradley. v.79, n.9, Sept. 1941, p.60-62, p.118.
79	1941	Winter maintenance of urban streets in Canadian municipalities. Articles by representatives of various towns and cities. v.79, n.9, pept. 1941, p.64-65, p.76, p.108-109, p.112-113.
79	1941	Lessons from past experience in combating snow on airports. v.79, n.9, Sept. 1941, p.69-72, p.104.
79	1941	An airport manager's diary. Report on snow removal operations at Moncton, N.B. airport during winter 1940-41. v.79, n.9, Sept. 1941, p.74, p.114-118.
7 9	1941	Snow removal policies and methods of the provincial highways departments. v.79, n.9, Sept. 1941, p.78-79.
79	1941	Methods of skid-proofing icy pavements. v.79, n.9, Sept. 1941, p.82-84.
79	1941	The practical benefits of snow clearing and ice control. Articles by officials of a number of municipalities. v.79, n.9, Sept. 1941, p.86, p.97.
79	1941	Importance of equipment maintenance in the work of keeping roads open continuously during the winter. v.79, n.9, Sept. 1941, p.89.
79	1941	Locomotives of the snow roads. Opening Canada's north country by means of tractor-trains. v.79, n.9, Sept. 1941, p.90.
79	1941	Snow handling policy and practice in Canadian towns and cities. A supplement to the article in the Sept. issue entitled "Winter maintenance of urban streets". v.79, n.11, Nov. 1941, p.27-28, p.62-68.
80	1942	Lessons from frost damage to roads. v.80, n.2, Feb. 1942, p.100.
80	1942	Snow removal from city streets - methods and costs of winter maintenance in typical Canadian municipalities. v.80, n.2, Feb. 1942, p.103.

VOL.	YEAR	TITLE
80	1942	Army and airforce test Canadian-made snow blowers. v.80, n.3, Mar. 1942, p.36-38, p.58-60.
80	1942	Snow removal methods in Stratford. Letter to the editor. v.80, n.4, Apr. 1942, p.70.
80	1942	Thirty roto wings and offset plows for R.C.A.F. airports. v.80, n.9, Sept. 1950, p.38, p.86.
80	1942	Winter street maintenance in Nelson. Letter to the editor, by H.D. Dawson. v.80, n.4, Apr. 1942, p.170.
80	1942	Wartime experience in runway clearance. Winter maintenance of airports, by T. Roberts. v.80, n.10, Oct. 1942, p.29-32, p.66-70.
80	1942	Winter maintenance methods for R.C.A.F. airfields. v.80, n.10, Oct. 1942, p.33-35, p.100-104.
80	1942	Principles of winter road maintenance as exempli- fied by practices followed by the Ontario Depart- ment of Highways. v.80, n.10, Oct. 1942, p.36-38, p.82.
80	1942	Can the meteorological service help to improve winter road maintenance? by J. Patterson. v.80, n.10, Oct. 1942, p.39-40, p.92-94.
80	1942	Selection of equipment for snow removal and ice control, by C.L. Motl. v.80, n.10, Oct. 1942, p.41-42, p.86-90.
80	1942	Snowplowing program in Bruce county, by G.E. Stephenson. v.80, n.10, Oct. 1942, p.106.
80	1942	Winter operation of motor vehicles. v.80, n.10, Oct. 1942, p.112.
80	1942	Operating an information service on winter road conditions, by B.R. Downey. v.80, n.10, Oct. 1942, p.118, p.122-123.
80	1942	Snow, in relation to highway location and design, by W.H. Harvie. v.80, n.10, Oct. 1942, p.123, p.127, p.130-131.
80	1942	How can frost boils be prevented? v.80, n.11, Nov. 1942, p.26, p.46.
81	1943	Cold-weather paving of asphaltic roads, by W.R. Macatee. v.81, n.2, Feb. 1943, p.23, p.80.

VOL.	YEAR	TITLE
81	1943	Mechanics of frost heaving. v.81, n.5, May, 1943, p.84-85.
81	1943	Public service aspects of winter maintenance, by E.H. Murray. v.81, n.10, Oct. 1943, p.37-38, p.106-108.
81	1943	Snow-blowers extensively used in the province of Quebec, by A. Bergeron. v.81, n.10, Oct. 1943, p.39, p.120-121.
81	1943	Snow-removal equipment in the R.C.A.F. v.81, n.10, Oct. 1943, p.40-41, p.116-118.
81	1943	Variation of climate adds to snow-removal problems, by A. Dixon. v.81, n.10, Oct. 1943, p.42, p.122.
81	1943	Snowfence and permanent hedges are Manitoba's most effective means of winter road maintenance, by M.A. Lyons. v.81, n.10, Oct. 1943, p.43, p.82.
81	1943	Standardized equipment for summer and winter in New Brunswick's maintenance policy, by A.W. Barbour. v.81, n.10, Oct. 1943, p.44.
81 .	1943	War conditions increase demand for snow removal in the province of Saskatchewan, by W.W. Perrie. v.81, n.10, Oct. 1943, p.45-46, p.94.
81	1943	Winter maintenance by snow-plowing associations. Experiences of three counties in Ontario. v.81, n.10, Oct. 1943, p.47, p.94.
81	1943	Symposium on equipment for winter road maintenance. Eighteen county engineers give their views on the best way to remove snow. v.81, n.10, Oct. 1943, p.48-50, p.98-105.
81	1943	Snow-clearing in Nova Scotia, by J.L. Wickwire. v.81, n.10, Oct. 1943, p.86.
81	1943	Snowfences for drift control. v.81, n.10, Oct. 1943, p.110-112.
81	1943	Skid-proofing highways with chemically-treated sand. A summary of practice in Ontario. v.81, n.10, Oct. 1943, p.112-114.
81	1943	Winter maintenance problems on the Alaska highway, by G.A. Williams. v.81, n.11, Nov. 1943, p.27-30, p.58-59.

VOL.	YEAR	TITLE
82	1944	Increasing snowploughing efficiency. v.82, n.1, Jan. 1944, p.54, p.72.
82	1944	Ice control at airports. v.82, n.2, Feb. 1944, p.39, p.81.
82	19կ4	The second winter's experience on the Alaska highway. Organization for combating snow and ice, by H.R. Flint. v.82, n.7, July, 1944, p.41-44, p.79.
82	1944	Obtaining concrete resistant to freezing and thawing, by W.J. McCoy. v.82, n.7, July, 1944, p.48-49, p.82-85.
82	1944	Preventing damage by frost. Short reference to an outline of procedure for practical field tests issued by the Committee on the treatment of subgrade soils with calcium chloride to prevent detrimental frost action of the Highway Research Board. v.82, n.9, Sept. 1944, p.123.
82	1944	Treatment of icy pavements, issued by the Highway Research Board, Committee on treatment of icy pavements. v.82, n.10, Oct. 1944, p.67-69, p.109-112.
82	1944	New experiments in ice control. A brief editorial comment. v.82, n.11, Nov., 1944, p.51.
82	1944	Ice control without abrasives, by L.J. Ettinger Jr. v.82, n.11, Nov. 1944, p.58-59, p.86-88.
83	1945	Street-cleaning costs in winter, by C.S. Anderson. v.83, n.1, Jan. 1945, p.122-123, p.126-127.
83	1945	Lessons of the "Big Storm". Adequate organization and ample equipment are essential to keep roads open. v.83, n.2, Feb. 1945, p.57-59.
83	1945	Pooling snow-clearing equipment, by W.A. Clarke. v.83, n.3, Mar. 1945, p.119, p.146-148.
83	1945	Equipment for snow removal, by T.R. Patterson. v.83, n.3, Mar. 1945, p.160-161.
83	1945	What constitutes "adequate" snow-cleaning equipment? by M.F. Ker. v.83, n.3, Mar. 1945, p.162-163.

<u>vc</u>	L.	YEAR	TITLE
8	33	1945	Ice pressure on Bow River damages bridge. A brief item in the monthly feature, "News of the month'. v.83, n.4, Apr. 1945, p.86.
8	33	1945	Montreal snow-removal appropriation approved. A brief entry in the monthly feature, "News of the month". v.83, n.4, pr. 1945, p.86.
8	33	1945	Hedges reduce snow-plowing costs, by H.J. Moore. v.83, n.5, May, 1945, p.64-66.
8	33	1945	Planting of snow hedges, by I.C. Marritt. v.83, n.5, May, 1945, p.66-67, p.142.
8	33	1945	Snow hedges in Simcoe county, by E.W. Jones. v.83, n.5, Nay, 1945, p.132-133.
8	33	1945	Removal of snow from elevated highway structures, by P.R. Walters. v.83, n.9, Sept. 1945, p.150.
8	33	1945	reconomics of snow removal. v.83, n.10, Oct. 1945, p.03, p.112.
8	33	1945	Winter maintenance, by G.A. McNamee. v.83, n.10, Oct. 1945, p.137-138.
{	33	1945	Snow-handling on airports. Results of R.C.A.F. experience. v.83, n.12, Dec. 1945, p.64-66, p.97-99.
8	84	1946	Effect of freezing and thawing on concrete pavements. v.84, n.1, Jan. 1946, p.65-68, p.90-100.
. (34	1946	Montreal's snow-removal method, by H.A. Gibeau. v.84, n.4, Apr. 1946, p.90-91, p.159-165.
ł	84	1946	Michigan counties use underbody scrapers for secondary road maintenance, by A.L. Burridge. v.85, n.5, May, 1946, p.86-88.
ł	84	1946 .	Research on frost action in soils, by R.M. Hardy. v.84, n.9, Sept. 1946, p.74-76, p.102.
. (84	1946	Winter maintenance practice on Ontario highways. v.84, n.11, Nov. 1946, p.120-122.
i	85	1947	Snowfall statistics for Canada. v.85, n.1, Jan. 1947, p.97-98.
	85	1947	Snow-plowing an art, not a science, in the Ottawa district, by J.L. Shearer. v.85, n.2, Feb. 1947, p.68, p.105-106.

ACI.	YEAR	TITLE
85	1947	Snow drifts 20 ft. deep isolate Ontario towns for week. v.85, n.3, Mar. 1947, p.54-88, p.134-138.
85	1947	New method of removing snow from airports, by J.R. Shannon. v.85, n.4, Apr. 1947, p.95-96, p.120-124.
85	1947	Frost damage to sealed surfaces. Paper in New Zealand Institution of Engineers, Proceedings, by H.J. Smith. 1946. v.35, n.8, Aug. 1947, p.110-112.
55	1947	Frost action in subgrades and bases, by A.W. Johnson. v.85, n.9, Sept. 1947, p.104-110, p.140-150.
85	1947	iunicipal and street railway authorities co- operate in snow-clearing, by 1.D. pradley. v.85, n.12, Lec. 1947, p.62-65.
85	1947	Transportation commission's responsibilities. Enow-clearing by T.T.C., by J.J. Inglis. v.85, n.12, Dec. 1047, p.65-66, p.109-112.
86	1948	Highway department's new winter service. A brief editorial comment. v.86, n.1, Jan. 1948, p.51, p.88.
86	1948	Ice control from a grain elevator. v.86, n.1, Jan. 1948, p.57-60, p.96.
86	1948	Concentrated attack on snowbound roads. v.86, n.1, Jan. 1948, p.69, p.97-99.
86	1948	Laval University now studying snow removal. A brief item in the monthly feature, "The news review". v.86, n.2, Feb. 1948, p.58.
86	1948	Winter road maintenance improved by telephone service. v.86, n.2, Peb. 1948, p.65-69, p.123-124.
86	1948	Symposium on sidewalk snow clearing. v.86, n.2, Feb. 1948, p.70-71, p.129-136.
86	1948	Treatment of icy pavements. Revision of a bulletin issued by the mighway Research board, entitled "Recommended practice for treatment of icy pavements". v.86, n.2, Feb. 1948, p.81-84, p.120.

VOL.	YEAR	TITLE
86	1948	Vermont's experience with snow removal and ice control, by H.E. Sargent. v.86, n.10, Oct. 1948, p.61, p.94-102.
87	1949	Street cleaning and snow removal in the city of Toronto, by H.D. Bradley. v.87, n.8, Aug. 1949, p.53-56, p.108-110.
87	1949	Winter maintenance in Nova Scotia, by R.W. McColough. v.87, n.10, Oct. 1949, p.92, p.114-118.

: 4

ROADS AND CONSTRUCTION

VOL.	YEAR	TITLE
88	1950	Experiments with elevated, inclined snow fence on Ontario roads, by C. Fraser. v.88, n.4, April, 1950, p.88-90, p.115-117.
88	1950	Controlling frost effects on roads with calcium chloride, by H.R. Smith. v.88, n.12, Dec. 1950, p.85-86, p.106-108.

WATER AND SEWAGE

VOL.	YEAR	TITLE
78	1940	What precautions have been exercised or what steps are being taken to minimize winter maintenance troubles in your waterworks system? Answers to question in the monthly feature, "Round-table conference". v.78, n.12, Dec. 1940, p.30-33.
79	1941	Problems involved in cold-weather operation of sewerage systems, by A.E. Berry. p.13-15. v.79, n.11, Nov. 1941, p.40-41.
80	1942	Frost damage to water meters. A brief article in the monthly feature, "Questions and Answers". v.80, n.1, Jan. 1942, p.30-31.
80	19կ2	Water meters damaged by frost in Winnipeg. A brief reference to the article entitled, "Frost damage to water meters" in the January issue of Water and Sewage, by W.P. Brereton. v.80, n.2, reb. 1942, p.53.
81	1943	Chlorinator operation during the winter, by R.M. Harris. v.81, n.1, Jan. 1943, p.9-10.
82	19կկ	Frost control in waterworks systems. A discussion under the chairmanship of W.E. MacDonald at the meeting of Canadian section of A.W.W.A. Niagara Falls. v.82, n.5, May, 1944, p.132-133.
82	1944	Street-cleaning costs in winter, by C.S. Anderson. v.82, n.11, Nov. 1944, p.84-85.
86	1948	Frost control. Reference to a report to be issued by the Canadian section of A.W.W.A. under chairmanship of W.E. MacDonald. v.86, n.12, Dec. 1948, p.10.

CANADIAN SOCIETY OF CIVIL ENGINEERS. TRANSACTIONS

later ENGINEERING JOURNAL

VOL.	DATE	TITLE
1	1887	Frazil ice: on its nature and the prevention of its action in causing floods, by G.H. Henshaw. v.l, pt. 1, JanJune, 1887, p.1-23.
1 % .8	1887	Snow slides in the Selkirk mountains, by G.C. Cunningham. v.l, pt. 2, OctDec. 1887, p.18-31.
5	1891	Some observations on the expansion and contraction of ice in Canadian waters, by J.H. Dumble. v.5, pt. 2, OctDec. 1891, p.270-308.
8	1894	Cement mortars in freezing weather, by M.J. Butler. v.81, pt. 1, JanJune, 1894, p.177-188.
12	1898	Masonry pier moved by ice and replaced, by R.W. Leonard. v.12, pt. 2, OctDec. 1898, p.131-133.
15	1901	Ice formation in Canadian waters and physical laws governing its formation, by H.T. Barnes. v.15, pt. 1, JanJune, 1901, p.78-86.
15	1901	Ice floods and winter navigation of lower St. Lawrence, by T.C. Keefer. An abstract. v.15, pt. 1, JanJune, 1901, p.94-95.
15	1901	Steamers for winter navigation and ice breaking, by R. Runeberg. An abstract. v.15, pt. 1, JanJune, 1901, p.95.
26	1912	Iceberg detection in navigation, by H.T. Barnes. v.26, pt. 1, JanJune, 1912, p.156-163.
26	1912	Rotary snow plows, by H.H. Vaughan. v.26, pt. 2, OctDec. 1912, p.348-357.

ENGINEERING JOURNAL

VCL.	DATE	TITLE
2	1919	Design of Hydro-electric plants for combating ice troubles, by R.M. Wilson. v.2, n.5, May, 1919, p.383-395. Discussion. v.2, n.11, Nov. 1919, p.507.
9	1926	Engineering features in breaking Alleghany ice gorge, by H.T. Barnes. v.9, n.11, Nov. 1926, p.453-461.
11	1928	Electric heating of rock bars in Hydro-electric plants, by C.R. Ried. v.ll, n.4, Apr. 1928, p.263-265.
12	1929	Formation and adhesion of ice, by H.T. Barnes. v.12, n.11, Nov. 1929, p.549-551.
12	1929	Operation and maintenance of railway tracks in regions of heavy snowfall, by F.W. Alexander. v.12, n.11, Nov. 1929, p.581-588.
12	1929	Operation and maintenance of railway tracks in regions of heavy snowfall, by C.B. Brown. v.12, n.11, Nov. 1929, p.588-591.
15	1932	Ice thrust in connection with Hydro-electric plant development with special reference to the plant at Island Falls on the Churchill River, by E. Brown and G.C. Clarke. v.15, n.1, Jan. 1932, p.18-25.
15	1932	Train ferry, Charlottetown, by W. Lambert. v.15, n.2, Feb. 1932, p.73-85.
21	1938	Collapse of Falls View bridge, by P.L. Pratley. v.21, n.8, August, 1938, p.375-381.
21	1938	Snow surveys, by R.C. Farrow. v.21, n.10, Oct. 1938, p.451-455.
29	1946	Permanently frozen ground and foundation design, by R.M. Hardy and E. D'Appolonia. v.29, n.1, Jan. 1946, p.4-13.
29	1946	Winter temperature cycle of the St. Lawrence waters, by J.G.G. Kerry. v.29, n.1, Jan. 1946, p.26-34. Discussion. v.29, n.9, Sept. 1946, p.521-535.
33	1950	Snare River power project, by G.V. Eckenfelder and B.E. Russell. v.33, n.3, Mar. 1950, p.165-171.

VOL.	DATE	TITLE		
33	1950	Propulsion and auxiliary machinery in "wind" class ice-breakers. v.33, n.4, Apr. 1950, p.271-275.		
33	1950	Ice cofferdams for repair of bridge piers, by A.J. Taunton. v.33, n.7, July, 1950, p.598-601.		

ROYAL SOCIETY OF CANADA. TRANSACTIONS

SECTION III

SERIES	VOL.	YEAR	TITLE
1	4	,1886	On some points in reference to ice phenomena, by R. Bell. p.85-92.
2	2	1896	On some measurements of the temperature of the river water opposite Montreal, by H.T. Barnes. p.37-44.
2	3	1897	On some measurements of the temperature of the Lachine rapids during the winter 1896-1897, by H.T. Barnes. p.17-30.
2	4	1898	Ice floods and winter navigation of lower St. Lawrence, by T.C. Keefer. p. 3-30.
2	5	1899	Note on frazil and anchor ice with considerations as to freezing point of water, by H.T. Barnes. p.17-22.
2	8	1902	The variation in density of ice, by H.P. Cooke. p.122-134.
2	8	1902	On the density of ice, by H.T. Barnes. p.143-153.
2	10	1904	Note on an apparently accidental formation of frazil ice in a cryophorus, by J. Cox. p.3-4.
2	10	1904	On the artificial production of frazil ice to-gether with measurements of temperature conditions in the water, by H.T. Barnes. p.29-32.
2	10	1904	The growth of ice crystals in a Bunsen ice calorimeter, by H.T. Barnes and H.S.B. Lucas. p.33-39.
2	12	1906	Anchor ice formation from the stand- point of the radiation theory, by H.T. Barnes, p.65-109.
3	i	1907	Equilibrium between ice and water, by H.T. Barnes. p.29-30.
3	i Branch Sprach	1907	Fertilizing value of snow, by F.T. Shutt. p.35-38.

SECTION III

SERIES	VOL.	YEAR	TITLE
3	2	1908	Nitrogen compounds in rain and snow, by F.T. Shutt. p. 181-186.
3	3	1909	Physical constants of ice, by H.T. Barnes. p.3-28.
3	3	1909	The ice question - as it affects Canadian water power with special reference to frazil and anchor ice, by H.T. Barnes. p. 143-178.
3	4	1910	Nitrogen compounds in rain and snow, by F.T. Shutt. p.55-59.
3	8	1914	Crushing strength of ice, by H.T. Barnes. p.19-22.
3	8	1914	Expansive force of ice, by H.T. Barnes, J.W. Hayward and N.M. McLeod. p.29-49.
3	8	1914	Nitrogen compounds in rain and snow, by F.T. Shutt. p.83-87.
3	9	1915	Crushing strength of ice, by H.T. Barnes and H.M. Mackay. p.87-92.
¾ 3	10	1916	Structure of hailstones of exceptional form and size, by F.E. Lloyd. p.47-50.
3	10	1916	Production of ring ice or hoar frost in pipes, by H.T. Barnes. p.93-96.
3	11	1917	Buoyancy of frazil crystals in water, by H.T. Barnes. p.61-62.
3	11	1917	Nitrogen compounds in rain and snow, by F.T. Shutt. p.63-71.
3	12	1918	On the penetration of frost in concrete structures, by L.V. King. p.115-119.
,. 3 .	18	1924	Experimental study of the motion of curling stones, by E.L. Harrington. p.247-259.
3	19	1925	Nitrogen compounds in rain and snow, by F.T. Shutt. p.1-9.

SECTION III

SERIES	VOL.	YEAR	TITLE
3	29	1935	A note on the structure of ice, by H.T. Barnes. p.53-59.
3	- 33	1939	Thermodynamic surfaces of water, by A L. Clarke and L. Katz. p.59-71.
3	37	1943	Colours of snow-fields n sunlight, by W.E.K. Middleton. p.3 -43.
3	43	1949	Permafrost at Giant Yellowknife, by J.D. Bateman. p.7-11.
3	43	1949	The recession of the Wiscon in glac er in southern Ontario, by L.J. Chapman and D.F. Putnam. p.23-52.

AUTHOR INDEX

The page references in this alphabetical index to authors refer to the listing in the subject section only. Then using this part of the Bibliography the title and periodical reference should be obtained from the Subject I dex.

ALEXANDER, F.W., p.17.

ANDERSON, C.S., p.21, p.24.

ASKWITH, F.C., p.24, p.26.

AUSIIN, E.T., p.33.

BARBOUR, A.W., p.23.

BARNES, H.T., p.4, p.5, p.7, p.12, p.13, p.14, p.15, p.33.

BATEMAN, J.D., p.16.

BEIL, R., p.13.

BERGERON, A., p.23, p.26.

BERRY, A.E., p.33.

BLAMGREN, E.E., p.10.

BLANCHARD, A.B., p.27.

BOUCHARD, J., p.27.

BRADLEY, H.D., p.24.

BRERETON, W.P., p.33.

BROSSEAU, J., p.24.

BROWN, C. .. p.17.

BROWN, E., p.7.

BUCHANAN, W.B., p.33.

BUETEAU, W.C., p.18.

BURRIDGE, A.L., p.23.

BURTON, V.R., p.21, p.27.

BUTLER, M.J., p.34.

CARREL, F., p.27.

Chaliers, A.E., p.10.

CHAPMAN, L.J., p.6.

CLARKE, A.L., p.13.

CLARKE, G.C., p.7.

CLARKE, W.A., p.23.

COLLINS, J.R., p.10.

COOKE, H.P., p.13.

CORDULLO, F.E., p.34.

COURCHESNE, A., p.10.

COX, J., p.5.

CRIEM, R.W., p.10.

CUMMINGS, A., p.27.

CUNNINGHAM, G.C., p.31.

D'APPOLONIA, E., p.16.

DAWSON, H.D., p.24.

DIXON, A., p.27.

DOBBIN, R.L., p.33.

DOBSON, W.P., p.33.

DORION, R., p.5.

DOWNEY, B.R., p.27.

DUMBLE, J.H., p.15.

ECKENFELDER, G.V., p.7, p.16.

ETTINGER, L.J. JR., p.11.

EWENS, W.E., p.15.

FARROW, R.C., p.19.

FENKELL, G.H., p.7.

FIELDING, J.S., p.5.

FI\LAYSON, J.F., p.13.

FINNERMAN, G.H., p.33.

FINNEY, E.A., p.3.

FLINT, H.R., p.27.

FLYNN, A., p.22.

FRASER, C., p.3.

FRAZER, A., p.27.

GIBEAU, H.A., p.24.

GRANT, B.F., p.7.

GRATTAN, A., p.27.

GREENE, H.S., p.24.

GREIG, G.G., p.27.

GRIMMER, S.A., p.27.

GROAT, B.F. p.7.

GROFF, C.G., p.22.

HARDY, R.M., p.18.

HARDY, R.M., p.16.

HARISON, W.M., p.23.

HARRINGTON, E.L., p.2.

HARRIS, R.M., p.33.

HARRISON, C.L., p.8.

HARVIE, W.H., p.3.

HAY, A.K., p.3, p.24, p.28.

HAYWARD, J.W., p.13.

HENSHAW, G.H., p.5.

HOGG, T.G., p.8.

HORTON, R.E., p.20.

HOYT, W.C., p.19.

HUNTER, L.M., p.25.

HUTCHESON, W.B., p.28.

INGLIS, J.G., p.25.

INNES, J.S., p.28.

ISABELLA, N.M., p.28.

JOHNSON, A.W., p.18.

JOHNSTON, T., p.28.

JONES, C.J., p.17.

JONES, E.W., p.3.

KATZ, L., p.13.

KEATING, C.E., p.1

KEEFER, T.C., p.15.

KENNEDY, J., p.9.

KER, M.F., p.23.

KERRY, J.G.G., p.15.

KING, L.V., p.13.

KNIGHT, J.A., p.ll.

LALONDE, A., p.28.

LAMBERT, W., p.9.

LANG, J.S., p.17.

LANGLOIS, W.L., p.28.

LEA, R.S., p.15.

LEARNED, C.E., p.20.

LeBLANC, C.J., p.25.

LEONARD, R.W., p.16.

LLOYD, F.E., p.6.

LUCAS, H.S.B., p.13.

LYON, H.L., p.8.

LYONS, M.A., p.3.

MACATER, W.R., p. 34.

McCOLOUGH, R.W., p.28.

McCOY, W.J., p.34.

McCRARY, J.A., p.8.

McDONALD, D., p.22.

MacDONALD, W.E., p.33.

MACKAY, H.M., p.13.

McLACHLAN, D.W., p.15.

McLEAN, A.D., p.1.

McLEOD, N.M., p.13.

MacMILLAN, L.B., p.28.

McNAMER, G.A., p.28.

McNEILL, T.A., p.11.

MARRITT, I.C., p.3.

MARTINEAU, J.O., p.29.

MELANSON, W.A.S., p.29.

MERCIER, P.E., p.25.

MIDDLETON, W.E.K., p.20.

MILLER, J.D., p.29.

MOORE, H.J., p.3, p.22.

MORNINGTON, S., p.8.

MOTL, C.L., p.23.

MURPHY, J., p.5, p.8.

MURRAY, E.H., p.29.

NEISS, G., p.29.

NEWSOM, R.J., p.34.

NORTON, G.H., p.25.

PARSONS, R.H., p.29.

PATTERSON, J., p.29.

PATTERSON, T.R., p.23.

PERRIE, W.W., p.29.

POWELL, N.L., p.29.

PRATLEY, P.L., p.16.

PUTNAM, D.F., p.6.

RACICOT, J.A., p.10.

REID, R.H., p.11.

RICHARDS, H.T., p.22.

RIED, C.R., p.8.

ROBBINS, C.A., p.4, p.29.

ROBERTS, T., p.1.

ROSE, H.C., p.29.

ROSENWALD, W.F., p.30.

RUNEBERG, R., p.9.

RUSSELL, B.E., p.8, p.16.

RUSSELL, S.R., p.15.

RUTHERFORD, F.N., p.30.

SAMSIOE, A.F., p.8.

SARGENT, H.E., p.30.

SAUNDERS, A.L., p.30.

SAUNDERS, W.L., p.30.

SAWYER, K.I., p.30.

SHANNON, J.R., p.1.

SHEARER, J.L., p.25.

SHUTT, F.T., p.20, p.21.

SKERRET, R.G., p.8.

SMITH, A.A., p.30.

SMITH, H.R., p.18.

SMITH, H.W., p.18.

STEINBAUGH, V.B., p.30.

STEINBURG, S.S., p.30.

STEPHENSON, G.E., p.30.

TAUNTON, A.J., p.9, p.16.

TAYLOR, J.C.D., p.19.

TREMOYNE, J.E., p.11.

TURNBULL, J.T., p.30.

UPHAM, C.M., p.30.

VAUGHAN, H.H., p.23.

VAUGHN E.J., p.11.

WALTERS, P.R., p.31.

WARLER, C.P., p.25.

WICKWIRE, J.L., p.31.

WIER, F.E., p.11.

WILLIAMS, G.A., p.31.

WILLIAMS, R.S., p.32.

WILSON, R. "., p.9.