

GLACIOLOGICAL LITERATURE

THIS is a selected list of glaciological literature on the scientific study of snow and ice and of their effects on the Earth; for the literature on polar expeditions, and also on the "applied" aspects of glaciology, such as snow ploughs, readers should consult the bibliographies in each issue of *Recent Polar Literature* (supplement to the *Polar Record*). For Russian material the system of transliteration used is that agreed by the U.S. Board on Geographic Names and the Permanent Committee on Geographical Names for British Official Use in 1947. Readers can greatly assist by sending reprints of their publications to the Society, or by informing Dr. J. W. Glen of publications of glaciological interest. It should be noted that the Society does not necessarily hold copies of the items in this list, and also that the Society does not possess facilities for microfilming or photocopying.

CONFERENCES

- KARLSSON, T., ed. *Proceedings, the second international conference on port and ocean engineering under Arctic conditions. University of Iceland, Dept. of Engineering and Science, Reykjavik, Iceland, August 27-30, 1973.* [Reykjavik, University of Iceland, 1974.] viii, 801 p. [Includes the following papers: D. Bajzak, "A remote sensing program in sea ice and current studies", p. 3-21; G. D. Ashton, S. L. DenHartog and B. Hanamoto, "Icebreaking by tow on the Mississippi River with mv *Renee G*", p. 63-79; R. Y. Edwards, J. G. German and R. G. A. Lawrence, "Comparative model tests of the icebreaker performance of two Canadian Coast Guard icebreakers", p. 80-99; F. J. Legerer, "Design strategy for ice navigation", p. 101-14; E. Mäkinen, "Ship model testing in ice. Possibilities and reliability", p. 115-37; J. W. Lewis, N. A. Ehrlich and E. J. Lecourt, "Development of a craft capable of preparing an ice free channel through solid ice cover", p. 138-61; H. R. Bárðarson, "Icing of ships", p. 185-202; E. L. Lewis, "Arctic fjord flushing", p. 233-37; H. J. Walker, "Changes occurring in the oceanic portion of the Colville River delta, Alaska during spring flooding", p. 266-73; K. Hirayama, J. Schwarz and H. C. Wu, "Model technique for the investigation of ice forces on structures", p. 332-44; C. Sundararajan and D. V. Reddy, "Stochastic analysis of ice-structure interaction", p. 345-53; G. Holdsworth and A. Traetteberg, "The deformation of an Arctic ice island", p. 419-40; T. S. Murty and F. G. Barber, "An assessment of ice transport in the Hudson Bay region", p. 441-50; D. A. Mills, "Ridges and rafted ice on Lake Melville", p. 451-72; A. O. Nemeç, D. A. Mills, C. J. Langford and S. L. Jesscau, "Lake Melville ice investigation, Labrador", p. 472-89; R. R. Parmerter, "Dimensionless strength parameters for floating ice sheets", p. 490-501; C. P. Benedict, "Underwater profiling of icebergs", p. 601-07; T. R. Chari and J. H. Allen, "Iceberg grounding problems in the North Atlantic", p. 608-16; K. R. Croasdale, "The movement of Arctic landfast ice: its measurement and influence on offshore drilling", p. 617-36; W. S. Dehn and F. D. Hughes, "Sea ice versus Arctic operations in the Alaskan area", p. 637-58; J. English and R. T. Dempster, "Underwater laboratory in sub-Arctic waters", p. 659-70; P. Jumppanen, "Ice thermal loads against walls of water reservoirs", p. 679-702.]

GENERAL GLACIOLOGY

- HOFMANN, W. Die Internationale Glaziologische Grönland-Expedition (EGIG). 1. Das Forschungsprojekt und seine Ausführung. *Zeitschrift für Gletscherkunde und Glazialgeologie*, Bd. 9, Ht. 1-2, 1973, p. 239-52. [Describes conception, foundation and research programmes of the Expédition Glaciologique Internationale au Groenland from its beginnings to the second expedition in 1967-68.]
- IVES, J. D., and BARRY, R. G., ed. *Arctic and alpine environments*. London, Methuen, [c1974]. xviii, 999 p., 49 plates. [Articles relevant to glaciology are listed separately.]
- LANGWAY, C. C., jr. Ice core storage facility. *Antarctic Journal of the United States*, Vol. 9, No. 6, 1974, p. 322-24. [Describes briefly storage of cores by the U.S. Army Cold Regions Research and Engineering Laboratory at their facilities in New Hampshire.]
- MUKAI, T., and MUKAI, S. Temperature and motion of the grains in interplanetary space. *Publications of the Astronomical Society of Japan*, Vol. 25, No. 4, 1973, p. 481-88. [Equilibrium temperatures of interplanetary ice grains deduced. Radiation pressure is less than gravitational force for all sizes.]
- WILLIAMS, R. S., jr., and others. Environmental studies of Iceland with ERTS-1 imagery, by R. S. Williams, Jr., [and 8 others]. *Proceedings of the ninth International Symposium on Remote Sensing of Environment . . . 1974. . .* Ann Arbor, Center for Remote Sensing Information and Analysis, Willow Run Laboratories, Environmental Research Institute of Michigan, Vol. 1, [1974], p. 31-81. [Use of ERTS imagery is particularly valuable in studying geophysical phenomena of Iceland, including aspects of glaciology.]

GLACIOLOGICAL INSTRUMENTS AND METHODS

- BILCOW, D. W., and DOMINEY, S. C. A portable profiling snow gauge. *Proceedings of the Western Snow Conference*, 42nd annual meeting, 1974, p. 53-57. [Describes gauge, and discusses results from field studies.]
- CHUDOBIAK, W. J., and others. Radar remote sensors for ice thickness and soil moisture measurements, by W. J. Chudobiak [and 6 others]. (In Thompson, G. E., ed. *The applications of remote sensing and benefits to Canada. Proceedings [of the] second Canadian symposium on remote sensing, University of Guelph, Guelph, Ontario, Canada, April 29-May 1, 1974. Vol. 2. Ottawa, Canadian Remote Sensing Society, 1974, p. 417-24.*) [Fresh and saline ice. Five systems having very high-range resolution capabilities described.]
- GOODMAN, D. J., and others. Wire strainmeters on ice, [by] D. J. Goodman, A. J. Allan, R. G. Bilham. *Nature*, Vol. 255, No. 5503, 1975, p. 45-46. [Description of instrument for recording strain continuously and its use on sea ice and a glacier.]

- KOVÁCS, G., and MOLNÁR, G. Determination of snow water equivalent and snowmelt water by thickness of snow cover data. *Hydrological Sciences Bulletin*, Vol. 19, No. 4, 1974, p. 435-47. [New method derived.]
- LEADER, R. E. Meteor burst communication. *Proceedings of the Western Snow Conference*, 42nd annual meeting, 1974, p. 29-36. [Discusses application of technique to remote data collection, such as hydrological and meteorological data.]
- SCHRECK, R. I., and others. A simple, airborne, ice particle collector, [by] R. I. Schreck, V. Toutenhoofd and C. A. Knight. *Journal of Applied Meteorology*, Vol. 13, No. 8, 1974, p. 949-50. [Device for collecting particles in cold silicone oil and bringing them back to the laboratory.]
- VEILLETTE, J. Helicopter portable drill for high Arctic programs. Project 730019. *Canada. Geological Survey. Paper 75-1*, Pt. A, 1975, p. 427-29. [Describes drill for permafrost coring.]
- VEILLETTE, J. Modified CRREL ice coring augers. Project 730019. *Canada. Geological Survey. Paper 75-1*, Pt. A, 1975, p. 425-26. [Describes modification for use in permafrost, which provides additional storage room for cuttings and permits longer core run.]
- WATANABE, Z. Kongōeki ni yoru sekisetsu hakuhen no tsukurikata [A method of making thin sections of deposited snow by mixed solution]. *Seppyo*, Vol. 36, No. 3, 1974, p. 91-95. [Solutions of caprylic and capric acids and methyl cinnamate and of caprylic acid and ethyl cinnamate used at temperatures, respectively, of -8 to -10°C and -10 to -12°C . English summary, p. 94-95.]

PHYSICS OF ICE

- ADDISON, J. R. Electrical properties of saline ice at 1 kHz down to -150°C . *Journal of Applied Physics*, Vol. 46, No. 2, 1975, p. 513-22. [Laboratory measurements on artificial sea ice and comparison with earlier work on pure and doped ice.]
- ANDERSON, B. J. Nucleation and epitaxial growth of ice crystals from the vapor. *Dissertation Abstracts International*, B, Vol. 35, No. 9, 1975, p. 4580-B. [Experiments on growth of ice on covellite and AgI single crystals. Differences attributed to inherited strain which can also affect habit of snow crystals. Abstract of Ph.D. thesis, University of Nevada, Reno, 1974. University Microfilms order no. 75-5307.]
- BROWELL, E. V. UV optical constants of water and ammonia ices. *Dissertation Abstracts International*, B, Vol. 35, No. 8, 1975, p. 4105-B. [Determination from 1610 Å to 3200 Å for amorphous and 1h ice; 1925 Å to 3200 Å for amorphous ammonia ice. Abstract of Ph.D. thesis, University of Florida, 1974. University Microfilms order no. 75-3478.]
- CARRAS, J. N., and MACKLIN, W. C. Air bubbles in accreted ice. *Quarterly Journal of the Royal Meteorological Society*, Vol. 101, No. 427, 1975, p. 127-46. [Theory of formation of air bubbles in accreted ice and comparison with experiments.]
- CARRAS, J. N., and MACKLIN, W. C. The opacity of accreted ice. *Quarterly Journal of the Royal Meteorological Society*, Vol. 101, No. 428, 1975, p. 203-06. [Method of measurement described. Also suitable for studying air bubble structures of hailstones.]
- DAVIS, C. I. The ice-nucleating characteristics of various silver-iodide aerosols. *Dissertation Abstracts International*, B, Vol. 35, No. 7, 1975, p. 3374-B-75-B. [Experiments in cloud seeding in Wyoming and their relation to cloud chamber tests. Abstract of Ph.D. thesis, University of Wyoming, 1974. University Microfilms order no. 74-23689.]
- DOOLITTLE, J. B., and VALI, G. Heterogeneous freezing nucleation in electric fields. *Journal of the Atmospheric Sciences*, Vol. 32, No. 2, 1975, p. 375-79. [Experiments using AgI and organic nuclei show no effect of electric field up to 6 kV cm $^{-1}$.]
- EVARD, G., and others. Influence de la température sur le comportement diélectrique des émulsions de glace dans le domaine des ondes kilométriques, note de G. Evard, B. Lagourette et J.-P. Montfort. *Comptes Rendus Hebdomadaires des Séances de l'Académie des Sciences*, Sér. B, Tom. 279, No. 19, 1974, p. 491-93. [Measurements of dielectric dispersion of ice emulsions from 0 to -60°C .]
- FALCIGLIA, F., and others. Positronium formation in ice, [by] F. Falciglia, G. Iaci, M. Lo Savio and E. Turrisi. *Applied Physics*, Vol. 5, No. 2, 1974, p. 179-80. [Broadening of narrow component in γ -annihilation distribution curve for positrons in ice attributed to Bloch states.]
- GIBSON, R. A., and WRIGHT, P. G. Dielectric Pippard plots for ferroelectric transitions in certain solid solutions, including impure ice. *Journal of the Physics and Chemistry of Solids*, Vol. 36, No. 4, 1975, p. 321-24. [Application of the theory to data for the 100 K transition in F-doped ice used to predict field dependence of transition temperature.]
- HALE, B. N., and PLUMMER, P. L. M. Molecular model for ice clusters in a supersaturated vapor. *Journal of Chemical Physics*, Vol. 61, No. 10, 1974, p. 4012-19. [Theory of ice 1h embryos shows this structure less stable than clathrate-like clusters.]
- HALE, B. N., and PLUMMER, P. L. M. On nucleation phenomena I: a molecular model. *Journal of the Atmospheric Sciences*, Vol. 31, No. 6, 1974, p. 1615-21. [Molecular model of cluster nucleation in supersaturated vapour.]
- JONES, D. R. H. Determination of the kinetics of ice-brine interfaces from the shapes of migrating droplets. *Journal of Crystal Growth*, Vol. 26, No. 1, 1974, p. 177-79. [Elongation of layer droplets migrating under a temperature gradient used to deduce kinetic solidification at the ice-droplet interface.]
- KELLAND, S. B. Twenty-vertex model on a triangular lattice. *Australian Journal of Physics*, Vol. 27, No. 6, 1974, p. 813-29. [Solution of a theoretical model connected with the ice polarization problem.]
- KING, W. D. Freezing rate of water droplets. *Journal of the Atmospheric Sciences*, Vol. 32, No. 2, 1975, p. 403-08. [Theory developed and compared with experiments.]
- KISELEV, V. F., and others. Poverkhnostnyye yavleniya na granitse led-gaz i led-tverdoye telo [Surface phenomena at the ice-gas and ice-solid interfaces]. [By] V. F. Kiselev, V. I. Kvilidze, A. B. Kurzayev. (In Tsyrovich, N. A., and others, ed. *Vtoraya Mezhdunarodnaya Konferentsiya po Merzlotovedeniyu. Doklady i soobshcheniya*. [Edited

- by] N. A. Tsyтович, B. A. Savel'yev, I. N. Votyakov. Vyp. 4. Yakutsk, Yakutskoye Knizhnoye Izdatel'stvo, 1973, p. 199–202.) [Review of liquid-like layer on ice surface.]
- KOBAYASHI, T. VLS [vapour–liquid–solid] growth on ice surfaces treated with AgI–NH₄I. *Journal of Crystal Growth*, Vol. 26, No. 1, 1974, p. 6–12. [Formation of terraces on basal plane and later growth rate of steps observed and discussed.]
- LAMY, P. L. Interaction of interplanetary dust grains with the solar radiation field. *Astronomy and Astrophysics*, Vol. 35, No. 2, 1974, p. 197–207. [Investigation of this interaction for, among others, ice spheres.]
- MEHRER, H. Theory of tracer diffusion in the Wurtzite structure with applications to hexagonal ice. *Zeitschrift für Physik B*, Vol. 20, No. 3, 1975, p. 281–88. [Theory of diffusion by vacancy mechanism.]
- MESCHI, D. J., and SEARCY, A. W. Kinetics of dissociative vaporization reactions. *High Temperature Science*, Vol. 6, No. 3, 1974, p. 221–36. [Theory of evaporation from solids developed and compared with data on ice and NaCl.]
- MILOSHEV, G. N., and TODOROVA, S. V. Adsorption effect on the appearance of the primary water product in the atmosphere. *Doklady Bolgarskoy Akademii Nauk*, Tom. 26, No. 11, 1973, p. 1481–84. [Adsorption increases temperature at which ice crystals form by sublimation.]
- NEVSKIY, A. S., and MALYSHEVA, A. I. O vliyaniy sposoba barbotazha vanny na teploobmen pri plavlenii l'da [Effect of the manner of bath bubbling on the heat transfer in ice melting]. *Inzhenerno-Fizicheskiy Zhurnal*, Tom 28, No. 1, 1975, p. 141–43. [Experiments on ice cylinders in water and NaCl solutions.]
- OLINGER, B., and HALLECK, P. M. Compression and bonding of ice VII and an empirical linear expression for the isothermal compression of solids. *Journal of Chemical Physics*, Vol. 62, No. 1, 1975, p. 94–99. [Measurement of density from 3–8 GPa and 298 K.]
- ONUKI, A., and others. First-order phase transition with a moving boundary. II. Theory of ice formation, [by] A. Onuki, Y. Shibuya and S. Kozaki. *Journal of Low Temperature Physics*, Vol. 15, Nos. 1–2, 1974, p. 161–68. [Exact solution of differential equation for moving boundary found and applied to ice freezing from water.]
- PASSARELLI, R. E., jr., and others. Ice nucleation in a supercooled cloud by CuI–3AgI and AgI aerosols, [by] R. E. Passarelli, Jr., H. Chessin and B. Vonnegut. *Journal of Applied Meteorology*, Vol. 13, No. 8, 1974, p. 946–48. [Experiments on numbers of active nuclei produced.]
- ROSINSKI, J., and NAGAMOTO, C. T. Silver halides and iodine monobromide systems as freezing nuclei. *Journal of Applied Meteorology*, Vol. 13, No. 7, 1974, p. 778–82. [Experimental study of enhancement of ice nucleability by exchange of I ions on surface of AgI.]
- RYAN, B. F., and others. The densities and growth rates of ice crystals between –5 C and –9 C, [by] B. F. Ryan, E. R. Wishart and E. W. Holroyd III. *Journal of the Atmospheric Sciences*, Vol. 31, No. 8, 1974, p. 2136–41. [Measurements and comparison with theory.]
- RYE, P. J., and MACKLIN, W. C. Crystal size in accreted ice. *Quarterly Journal of the Royal Meteorological Society*, Vol. 101, No. 428, 1975, p. 207–15. [Measurement of preferred orientation and dimensions of ice crystals resulting from freezing supercooled droplets on ice substrates.]
- SHIPMAN, L. L., and SCHERAGA, H. A. Computation of the intermolecular vibrational modes of a tetrahedral water pentamer at the core of an ice-like water cluster. *Journal of Physical Chemistry*, Vol. 79, No. 4, 1975, p. 380–83. [Calculations reported and compared with infra-red and neutron scattering spectra of ice Ih.]
- SMEDSKJÆR, L., and TRUMPY, G. Temperature dependence of the narrow component for positronium in ice. *Applied Physics*, Vol. 5, No. 1, 1974, p. 49–52. [Interpretation of results in terms of delocalized and localized positronium ice, the latter possibly trapped by L-defects.]
- STEPHEN, T. Freezing potentials and electrical conductivities of LiF, LiCl, and amine group ices. *Dissertation Abstracts International*, B, Vol. 35, No. 5, 1974, p. 2379-B. [Measurement and interpretation. Abstract of Ph.D. thesis, Saint Louis University, 1974. University Microfilms order no. 74–24146.]
- STILLINGER, F. H., and LEMBERG, H. L. Symmetry breaking in water molecule interactions. *Journal of Chemical Physics*, Vol. 62, No. 4, 1975, p. 1340–46. [Discusses how dipole–dipole forces between water molecules at large separation cause a change in symmetry as they approach.]
- SULLIVAN, D. E., and DEUTCH, J. M. Molecular theory of dielectric relaxation. *Journal of Chemical Physics*, Vol. 62, No. 6, 1975, p. 2130–38. [New theory of frequency-dependent dielectric permittivity in terms of a dipole “memory function”.]
- TATIBOUET, J., and others. Influence de la déformation plastique sur les propriétés ultrasonores de la glace I_h, [par] J. Tatibouet, R. Vassoille, J. Perez, P. F. Gobin. *Journal de Physique*, Tom. 36, No. 1, 1975, p. 69–73. [Measurement of attenuation and velocity of ultrasonic waves in ice single crystals after plastic deformation and during annealing.]
- VASCONCELLOS, K. F., and BEECH, J. Development of blow-holes in the ice–water–carbon dioxide system. *Journal of Crystal Growth*, Vol. 28, No. 1, 1975, p. 85–92. [Formation of blow-holes considered in relation to solute profile. Effect of freezing rate.]
- VENKATESH, C. G., and others. Amorphous solid water: an X-ray diffraction study, [by] C. G. Venkatesh, S. A. Rice, A. H. Narten. *Science*, Vol. 186, No. 4167, 1974, p. 927–28. [O atom pair correlation function determined for amorphous ice deposited at 10 K.]
- WHITWORTH, R. W. Charged dislocations in ionic crystals. *Advances in Physics*, Vol. 24, No. 2, 1975, p. 203–304. [Review. Includes section on charged dislocations in ice, p. 291–93.]

LAND ICE. GLACIERS. ICE SHELVES

- AMBACH, W., and JOCHUM, O. Zur Dispersion im offenen Gerinne: Einfluss von Randzonen bei Gletscherbächen. *Zeitschrift für Gletscherkunde und Glazialgeologie*, Bd. 9, Ht. 1–2, 1973, p. 181–88. [Discusses perturbation by boundary layers at margin of glacial streams when measuring discharge with tracers.]

- ARKEL, N. A. VAN. Die gegenwärtige Vergletscherung des Ararat. *Zeitschrift für Gletscherkunde und Glazialgeologie*, Bd. 9, Ht. 1-2, 1973, p. 89-103. [Results of survey of ice cover of Mt Ararat made in summer 1966. Presents map, description and selection of photographs for future comparisons.]
- BARKOV, N. I., and others. Izotopnyy khimicheskiy sostav materikovogo l'da v rayone stantsii Mirnyy [Isotopic chemical composition of continental ice in the Mirny station region]. [By] N. I. Barkov, V. A. Polyakov, Yu. V. Seletskiy, A. V. Yakubovskiy, N. V. Isayev. *Informatsionnyy Byulleten' Sovetskoy Antarkticheskoy Ekspeditsii*, No. 89, 1974, p. 19-23.
- DEAN, W. W. Maclure Glacier, California. A contribution to the International Hydrological Decade. *Proceedings of the Western Snow Conference*, 42nd annual meeting, 1974, p. 1-8. [Presents six years' data from mass balance studies of this small (0.17 km²) glacier in the Sierra Nevada, altitude 3 600-3 800 m.]
- DEWART, G., and others. Analysis of the Byrd station strain net, Antarctica, by G. Dewart, I. M. Whillans, H. H. Brecher. *Ohio State University. Institute of Polar Studies. Report No. 48*, 1974, iv 1, 49 p. [Presents results of field investigations relating to study of glacier flow.]
- ELACHI, C., and BROWN, W. E., jr. Imaging and sounding of ice fields with airborne coherent radars. *Journal of Geophysical Research*, Vol. 80, No. 8, 1975, p. 1113-19. [Presents recent results from radar imagery of glaciers in south-eastern Alaska, imagery of coastal and sea ice in northern Alaska and Beaufort Sea, and sounding of layered continental ice in Greenland.]
- FINSTERWALDER, RÜDIGER, and RENTSCH, H. Das Verhalten der bayerischen Gletscher in den letzten zwei Jahrzehnten. Erläuterungen zu den Gletscherstandskarten für die Jahre 1949(50)-1959-1970(71). *Zeitschrift für Gletscherkunde und Glazialgeologie*, Bd. 9, Ht. 1-2, 1973, p. 59-72, 5 maps [in end-pocket]. [The five small glaciers of the German part of the Alps were surveyed in these three years and documented in maps, scale 1 : 5 000. Behaviour of glaciers during this period is discussed.]
- GLOERSEN, P., and others. Microwave maps of the polar ice of the Earth, [by] P. Gloersen, T. T. Wilheit, T. C. Chang and W. Nordberg and W. J. Campbell. *Bulletin of the American Meteorological Society*, Vol. 55, No. 12, 1974, p. 1442-48. [By using scanning microwave radiometer at wavelength 1.55 cm on Nimbus-5 satellite, three different views of each pole were obtained at monthly intervals from December 1972 to January 1973, Results analysed and discussed.]
- GOVORUKHA, L. S., and others. Radiolokatsionnoye zondirovaniye lednikovogo pokrova o. King-Dzhordzh (Waterloo) [Radio-echo sounding of the King George Island (Waterloo) ice sheet]. [By] L. S. Govorukha, V. I. Chudakov, A. M. Shalygin. *Informatsionnyy Byulleten' Sovetskoy Antarkticheskoy Ekspeditsii*, No. 89, 1974, p. 15-18.
- HAMBREY, M. J. Oxygen isotope studies at Charles Rabots Bre, Okstindan, northern Norway. *Geografiska Annaler*, Vol. 56A, Nos. 3-4, 1974, p. 147-58. [Evaluates usefulness of oxygen isotope analysis in elucidating problems concerning flow and structure of this glacier.]
- HARRISON, A. E. *Mt. Baker, Washington. Coleman Glacier survey. Description and coordinates of photogrammetric control stations*. [Seattle], Washington, University of Washington. College of Engineering. Dept. of Electrical Engineering, 1974. 49 p. (Technical Report No. 181.) [Results summarized in table and maps; descriptions and data for each station are given individually.]
- HATTERSLEY-SMITH, G. Present Arctic ice cover. (In Ives, J. D., and Barry, R. G., ed. *Arctic and alpine environments*. London, Methuen, [c1974], p. 195-223.) [Surveys current state of knowledge of Arctic glaciers and their behaviour.]
- HUGHES, T. J. Is the west Antarctic ice sheet disintegrating? *ISCAP Bulletin* (University of Maine at Orono), No. 3, 1974, iv, 93 p. [Study of unstable Ross Sea glacial episodes; mechanisms that may control rate and extent of disintegration.]
- IKEN, A. Schwankungen der Oberflächengeschwindigkeit des White Glacier, Axel Heiberg Island im Zusammenhang mit Schwankungen der Wasserführung von Gletscherbächen und des Wasserdruckes in Gletschermühlen. *Zeitschrift für Gletscherkunde und Glazialgeologie*, Bd. 9, Ht. 1-2, 1973, p. 207-19. [Results of field work relating variations of surface velocity of glacier to variations of discharge of subglacial streams and of water pressure in moulins.]
- KRENKE, A. N. Zony l'doobrazovaniya na lednikakh [Zones of ice formation on a glacier]. *Geofizicheskiy Byulleten'*, No. 25, 1973, p. 44-56. [Classification of glaciers and formation of firn.]
- KRIMMEL, R. M., and TANGBORN, W. V. South Cascade Glacier: the moderating effect of glaciers on runoff. *Proceedings of the Western Snow Conference*, 42nd annual meeting, 1974, p. 9-13. [Applies results obtained from this glacier, 1965-73, to illustrate mechanisms by which glaciers moderate stream flow.]
- LICHTI-FEDEROVICH, S. Pollen analysis of ice core samples from the Devon Island Ice Cap. Project 690064. *Canada. Geological Survey. Paper 75-1*, Pt. A, 1975, p. 441-44. [Spectra from all levels were dominated by pollen from distant sources.]
- LIESTÖL, O. Glaciological work in 1973. *Norsk Polarinstitutt. Årbok 1973* [pub. 1975], p. 181-92. [Mainly mass-balance studies on four glaciers in Norway and two in Spitsbergen.]
- LOJENS, H. S. Streamflow formation in the Mistaya River basin, Rocky Mountains, Canada. *Proceedings of the Western Snow Conference*, 42nd annual meeting, 1974, p. 86-95. [Discusses influence of glacier melt.]
- MOKIEVSKY-ZUBOK, O. *Analysis of mass balance values and their accuracy for Sentinel Glacier, British Columbia, Canada*. Ottawa, Environment Canada. Inland Waters Directorate. Water Resources Branch, 1974. v, 4 p. (Scientific Series, No. 31.) [Method 1 based on determination of difference between measured winter and summer balances compared with method 2 based on difference between volume of remaining snow cover and ice and firn ablation. Latter more accurate.]
- MOKIEVSKY-ZUBOK, O. *Determination of the mass balance on Sentinel Glacier, British Columbia, Canada*. Ottawa, Environment Canada. Inland Waters Directorate. Water Resources Branch, 1973. v, 39 p. (Scientific Series, No. 30.) [Two surface methods compared for entire glacier; terrestrial photogrammetry for tongue.]

- Between 1966 and 1971, four years with positive and two years with negative mass balances. Total loss exceeded gain by 28 cm of water for entire surface.]
- MOKIEVSKY-ZUBOK, O. *Study of Sentinel Glacier, British Columbia, Canada within the International Hydrological Decade program. Procedures and techniques.* Ottawa, Environment Canada. Inland Waters Directorate. Water Resources Branch, 1973. vii, 31 p. (Technical Bulletin No. 77.) [General description of field work on this glacier, situated in maritime climate and subject to high winter precipitation.]
- ØSTREM, G. Present alpine ice cover. (In Ives, J. D., and Barry, R. G., ed. *Arctic and alpine environments.* London, Methuen, [c1974], p. 225–50.) [Conceptual discussion of alpine glaciers together with consideration of past and present conditions and interrelated aspects such as regional glaciation levels and snow-lines.]
- PATZELT, G. Die neuzzeitlichen Gletscherschwankungen in der Venedigergruppe (Hohe Tauern, Ostalpen). *Zeitschrift für Gletscherkunde und Glazialgeologie*, Bd. 9, Ht. 1–2, 1973, p. 5–57. [Discusses glacier fluctuations from A.D. 1500 to present day.]
- PETERSON, J. A., and others. Recession of snow and ice fields of Irian Jaya, Republic of Indonesia, by J. A. Peterson, G. S. Hope and R. Mitton. *Zeitschrift für Gletscherkunde und Glazialgeologie*, Bd. 9, Ht. 1–2, 1973, p. 73–87. [Discusses retreat of tropical ice masses during last 50 years, and compares behaviour of and factors affecting glaciers of New Guinea to those of the Andes and Africa.]
- ROSS ICE SHELF PROJECT. *Ross Ice Shelf Project (RISP) science plan. First edition (final draft).* Prepared by Ross Ice Shelf Project steering group. Lincoln, Nebraska, University of Nebraska—Lincoln. Ross Ice Shelf Project, 1974. viii, 91 p. [Describes project, objectives of which are to investigate conditions in ice shelf, in water beneath ice, and in sediments and bedrock on sea bottom, and to interpret from data past history and present conditions in this part of Antarctica.]
- RUTFORD, R. H. Coordination of ice core drilling. *Antarctic Journal of the United States*, Vol. 9, No. 6, 1974, p. 325–26. [Describes activities of the Polar Ice Core Office (PICO), established in March 1974 at the University of Nebraska, Lincoln.]
- SAVATYUGIN, L. M. O “samooblamyvani” shel’fovykh lednikov Antarktity [On “self-calving” of Antarctic shelf ice]. *Informatsionnyy Byulleten’ Sovetskoy Antarkticheskoy Ekspeditsii*, No. 89, 1974, p. 24–26. [Based on theory of N. Reeh.]
- SCHULZ, E. F. Harvesting glacier ice. *Proceedings of the Western Snow Conference*, 42nd annual meeting, 1974, p. 73–85. [Discusses icebergs as a source of fresh water.]
- SOKOLOV, D. P. Otsenka velichiny stoka talykh vod s lednikovykh obnazheniy lednika Fedchenko [Estimate of size of flow of melt water from the ice slopes of Lednik Fedchenko]. *Vestnik Leningradskogo Universiteta. Seriya Geologiya i Geografiya*, 1974, Vyp. 3, p. 103–07. [Melting occurs particularly from lower part of glacier tongue. English summary, p. 107.]
- STØYVA, J. *Breboka. Handbok i brevandring.* Oslo, Grøndahl & Sons, 1974. 99 p. [Handbook for climbing on glaciers.]
- WILLIAMS, L. D. Computer simulation of glacier mass balance throughout an ablation season. *Proceedings of the Western Snow Conference*, 42nd annual meeting, 1974, p. 23–28. [Programme described predicts areal distribution of snow water equivalent for each day of ablation season.]
- YESKIN, L. I. O svyazi teplovogo rezhima vod i srokov stanovleniya pripaya v rayone Yuzhnykh Orkneyskikh ostrovov [On the relation between water temperature and times of fast ice formation in the South Orkney Islands region]. *Informatsionnyy Byulleten’ Sovetskoy Antarkticheskoy Ekspeditsii*, No. 89, 1974, p. 59–61.
- ZOTIKOV, I. A., and others. Stok materikovogo l’da Antarktity i formirovaniye donnykh antarkticheskikh vod [Continental ice discharge of Antarctica and the formation of Antarctic bottom water]. [By] I. A. Zotikov, Yu. A. Ivanov, V. R. Barbash. *Okeanologiya*, Tom 14, Vyp. 4, 1974, p. 607–13. [English summary, p. 613.]

ICEBERGS. SEA, RIVER AND LAKE ICE

- BAJZAK, D. Thermal mapping of water envelopes surrounding icebergs. (In Thompson, G. E., ed. *The application of remote sensing and benefits to Canada. Proceedings [of the] second Canadian symposium on remote sensing, University of Guelph, Guelph, Ontario, Canada, April 29–May 1, 1974. Vol. 2.* Ottawa, Canadian Remote Sensing Society, 1974, p. 574–79.) [Information gathered on melt water and movement of icebergs, using large-scale thermal imagery.]
- BARASH, M. S. Granitsa plavuchikh l’dov v severnoy Atlantike v verkhnem pleystotsene [The limit of floating ice in the North Atlantic in the Upper Pleistocene]. *Okeanologiya*, Tom 14, Vyp. 5, 1974, p. 846–51. [Evidence from foraminifera in sediments indicates extent of ice sheet. English summary, p. 851.]
- BONDAREV, E. A., and others. K postroyeniyu modeli vskrytiya bol’shikh rek [On the construction of a model of break-up on big rivers]. [By] E. A. Bondarev, A. V. Kolmogorov, L. I. Fayko. *Meteorologiya i Gidrologiya*, 1974, No. 5, p. 99–101.
- BUSHUYEV, A. V., and others. *Atlas ledovykh obrazovaniy [Atlas of ice formations]*. [By] A. V. Bushuyev, N. A. Volkov, V. S. Loshchilov. Leningrad, Gidrometeoizdat, 1974. 139 p. [Glossary in Russian and English and annotated photographs of sea-ice forms, preceded by short account of processes of formation, deformation and melting.]
- BUYNITSKIY, V. Kh. Organicheskaya zhizn’ v morskoy l’du [Organic life in sea ice]. *Vestnik Leningradskogo Universiteta. Seriya Geologiya i Geografiya*, 1974, Vyp. 3, p. 76–81. [Algae studied in fast ice in Mirny harbour and Alasheyev Bay. English summary, p. 80.]
- CHEREPANOV, N. V., and KOZLOVSKIY, A. M. Vliyaniye strukturnoy neodnorodnosti morskogo antarkticheskogo l’da na yego prochnost’ [Influence of the structural heterogeneity of Antarctic sea ice on its strength]. *Informatsionnyy Byulleten’ Sovetskoy Antarkticheskoy Ekspeditsii*, No. 89, 1974, p. 67–71. [Study of fast ice.]
- COX, G. F. N. Brine drainage in sodium chloride ice. *Dissertation Abstracts International*, B, Vol. 35, No. 4, 1974, p. 1749-B–50-B. [Laboratory study of brine drainage using radioactive sodium and comparison with theory. Abstract of Ph.D. thesis, Dartmouth College, 1974. University Microfilms order no. 74-23090.]

- CUTFIELD, S. K. Hydrological aspects of Lake Vanda, Wright Valley, Victoria Land, Antarctica. *New Zealand Journal of Geology and Geophysics*, Vol. 17, No. 3, 1974, p. 645-57. [Discusses results obtained from simultaneous measurements of lake-ice thickness and density, and ice surface ablation made weekly for almost 12 months. Water inflow from Onyx River and lake level were also recorded at regular intervals.]
- DUNBAR, MOIRA, and LOWRY, R. T. Remote sensing of sea ice in Nares Strait and the Arctic Ocean, March 1973. (In Thompson, G. E., ed. *The application of remote sensing and benefits to Canada. Proceedings [of the] second Canadian symposium on remote sensing, University of Guelph, Guelph, Ontario, Canada, April 29-May 1, 1974. Vol. 2.* Ottawa, Canadian Remote Sensing Society, 1974, p. 407-15.) [Presents preliminary interpretation of this multi-sensor exercise.]
- FITCH, J. L., and JONES, L. G. Artificial ice islands could cut Arctic costs. *Oil and Gas Journal*, 11 November 1974, p. 173-81. [Discusses construction, maintenance and use for protecting off-shore drilling and production equipment from ice and waves. Island could be built on fast ice and ice added until it becomes grounded on sea bed.]
- GORDON, A. L., and TAYLOR, H. W. Seasonal change of Antarctic sea ice cover. *Science*, Vol. 187, No. 4174, 1975, p. 346-47. [Winter expansion of sea ice and subsequent retreat in summer may be linked with wind stress acting on Southern Ocean in conjunction with heat exchange in open water regions within ice fields.]
- HÄLLFORS, G., and NIEMI, Å. A *Chrysochromulina* (Haptophyceae) bloom under the ice in the Tvärminne archipelago, southern coast of Finland. *Memoranda Societatis pro Fauna et Flora Fennica*, 50, 1974, p. 89-104. [Observed March 1974 on under-surface of sea ice. Main component, *Chrysochromulina Birgeri*, described as new species.]
- HIRAYAMA, K.-I. An investigation of ice forces on vertical structures. *Dissertation Abstracts International*, B, Vol. 35, No. 4, 1974, p. 1678-B. [Model studies. Abstract of Ph.D. thesis, University of Iowa, 1974. University Microfilms order no. 74-21902.]
- HUTTER, K. Floating sea ice plates and the significance of the dependence of the Poisson ratio on brine content. *Proceedings of the Royal Society of London*, Ser. A, Vol. 343, No. 1632, 1975, p. 85-108. [Influence of temperature profile in ice plates calculated. Results show dependence of Poisson's ratio on microstructure to be negligible.]
- KIVISILD, H. R., and others. Salvage of heavy construction equipment by a floating ice bridge, [by] H. R. Kivisild, G. D. Rose and D. M. Masterson. *Canadian Geotechnical Journal*, Vol. 12, No. 1, 1975, p. 58-69. [Discusses design criteria and procedures required to build ice bridge across which equipment could be moved in winter from grounded barge in James Bay to land.]
- LANGLEBEN, M. P., and POUNDER, E. R. On the air drag of an Arctic ice floe. *Geophysical Research Letters*, Vol. 2, No. 1, 1975, p. 15-18. [Estimation of appropriate drag coefficient for any given type of ice surface possible; forecasting still presents difficulties.]
- LAVIOLETTE, P. E., and DIACHOK, O. I. The use of APT satellite imagery in a subarctic airborne oceanographic survey. *Arctic*, Vol. 27, No. 4, 1974, p. 306-09. [Ice and cloud conditions over the Greenland Sea.]
- LEGEN'KOV, A. P., and others. Rezul'taty izmereniy temperatury ledyanogo ostrova dreyfuyushchey stantsii SP-19 [Results of temperature measurements on ice island drifting station SP-19]. [By] A. P. Legen'kov, I. V. Chugin, N. N. Yermin. *Okeanologiya*, Tom 14, Vyp. 4, 1974, p. 619-22. [Measurements made from May 1971 to April 1972.]
- MACKAY, D. K., and LØKEN, O. H. Arctic hydrology. (In Ives, J. D., and Barry, R. G., ed. *Arctic and alpine environments*. London, Methuen, [c1974], p. 111-32.) [Includes river and lake ice conditions and effect of permafrost on groundwater.]
- MASTERSON, D. M. Floating ice sheets. *Northern Engineer*, Vol. 6, No. 3, 1974, p. 11-18. [Presents simple method for estimating stresses and deflections beneath long-term loads on floating ice sheets.]
- MEEKS, D. C., and others. A study of microwave emission properties of sea ice—AIDJEX 1972, by D. C. Meeks, R. O. Ramseier, W. J. Campbell. *Proceedings of the ninth International Symposium on Remote Sensing of Environment . . . 1974. . . Ann Arbor, Center for Remote Sensing Information and Analysis, Willow Run Laboratories, Environmental Research Institute of Michigan*, Vol. 1, [1974], p. 307-22. [Comparative study of surface-based 13.4 GHz passive microwave measurements shows distinct decreasing microwave emissions for first-year, transitional and multi-year sea ice types.]
- MURZIN, A. I. Opredeleniye informatsionnoy svyazi mezhdru polyami davleniya atmosfery i dreyfom l'da v arkticheskikh moryakh (na primere morya Laptevykh) [Determination of information relationship between atmospheric pressure fields and ice drift in Arctic seas (for example the Laptev Sea)]. *Meteorologiya i Gidrologiya*, 1974, No. 5, p. 74-79. [Possibility of using entropic ratio in estimating optimum scales of atmospheric processes affecting formation of drifting ice discussed. English abstract, p. 79.]
- NALIMOV, YU. V., and TIMEREV, A. A. Velichiny al'bedo snezhno-ledyanogo pokrova v nizov'yakh i ust'yakh arkticheskikh rek [Albedo values of snow and ice cover in lower course and mouth regions of Arctic rivers]. *Meteorologiya i Gidrologiya*, 1974, No. 5, p. 64-68.
- NESHYBA, S., and BADAN-DANGON, A. On ocean current induced by a prograding ice pack. *Geophysical Research Letters*, Vol. 1, No. 8, 1974, p. 351-54. [Presents model illustrating theory, and applies to Bering Sea shelf during freeze-up.]
- OLENICOFF, S. M. Soviet laboratory for sea ice research. *Arctic Bulletin*, Vol. 1, No. 5, [1975], p. 208-17. [Describes equipment and research in progress in the ice research laboratory of the Arkhticheskiy i Antarkhticheskiy Nauchno-Issledovatel'skiy Institut, Leningrad.]
- OSTERKAMP, T. E. Frazil ice nucleation mechanisms. *University of Alaska. Geophysical Institute. Report Series UAG R-230*, 1975, ii l., 13 l. [Reviews mechanisms, generalizes mass exchange process proposed by Osterkamp and others (*Journal of the Atmospheric Sciences*, Vol. 31, No. 5, 1974, p. 1464-65) and shows that only mass exchange and secondary nucleation can account for frazil-ice formation in streams and rivers.]
- PARASHAR, S. K., and others. Investigation of radar discrimination of sea ice, [by] S. K. Parashar, A. W. Biggs, A. K. Fung and R. K. Moore. *Proceedings of the ninth International Symposium on Remote Sensing of Environment . . .*

1974. . . . Ann Arbor, Center for Remote Sensing Information and Analysis, Willow Run Laboratories, Environmental Research Institute of Michigan, Vol. 1, [1974], p. 323-32. [Combining a 400 MHz and a 13.3 GHz system gave satisfactory discrimination between sea-ice types and thicknesses when used during April off Point Barrow, Alaska.]
- PIOTROVICH, V. V. Vliyaniye deyatel'nosti cheloveka na tolshchinu snezhnogo l'da na vodokhranilishchakh [The influence of man's activities on the thickness of slush-agglomerated ice on reservoirs]. *Metereologiya i Gidrologiya*, 1974, No. 7, p. 83-86.
- REIMNITZ, E., and others. Influence of grounding ice on the Arctic shelf of Alaska, [by] E. Reimnitz, P. Barnes, T. Forgatsch and C. Rodeick. *Marine Geology*, Vol. 13, No. 5, 1972, p. 323-34. [Describes Alaska's Beaufort Sea shelf; much of bottom roughness of this reflects action of grounded ice.]
- ROMANOV, A. A. Ob osnovnykh osobennostyakh raspredeleniya l'dov v moryakh, omyvayushchikh vostochnuyu Antarktidy [The main features of ice distribution in seas off eastern Antarctica]. *Informatsionnyy Byulleten' Sovetskoy Antarkticheskoy Ekspeditsii*, No. 89, 1974, p. 62-66. [Calculations of speed and direction of ice drift.]
- ROTHROCK, D. A. The steady drift of an incompressible Arctic ice cover. *Journal of Geophysical Research*, Vol. 80, No. 3, 1975, p. 387-97. [Calculated by assuming ice is incompressible and inviscid. Realistic flow patterns conforming to geometry of basin were obtained.]
- SHEARER, J., and BLASCO, S. Further observations of the scouring phenomena in the Beaufort Sea. Project 700092. *Canada. Geological Survey. Paper 75-1, Pt. A*, 1975, p. 483-93. [Describes observations on sea bottom scours and discusses characteristics of sea ice causing them.]
- STRETEN, N. A. Large-scale sea ice features in the western Arctic basin and the Bering Sea as viewed by the NOAA-2 satellite. *Arctic and Alpine Research*, Vol. 6, No. 4, 1974, p. 333-45. [VHRR data in both visible and infra-red channels were used for mapping sea ice distribution. Principal problem was high frequency of cloudy days.]
- TSANG, G. *Ice piling on lakeshores with special reference to the occurrences on Lake Simcoe in spring of 1973*. Burlington, Ontario, Environment Canada, Inland Waters Directorate. Canada Centre for Inland Waters, 1974-vii, 12 p. (Scientific Series, No. 35.) [Discusses structure of ice pile, formation, meteorological conditions under which piling may occur, dynamic analysis of factors affecting piling, and proposed method of avoiding piling damage to shoreline structures.]
- UZUNER, M. S. Hydraulics and mechanics of river ice jams. *Dissertation Abstracts International*, B, Vol. 34, No. 4, 1975, p. 1679-B. [Analytic model developed. Includes experiments on compressive strength. Abstract of Ph.D. thesis, University of Iowa, 1974. University Microfilms order no. 74-21947.]
- VINJE, T. E. Sea ice and drift speed observations in 1973. *Norsk Polarinstittutt. Årbok 1973* [pub. 1975], p. 197-202. [Monthly maps showing region between Greenland and Novaya Zemlya, based mainly on American satellite pictures.]
- VOLKOV, N. A., and BUSHUYEV, A. V., ed. *Nomenklatura morskikh l'dov. Uslovyne oboznacheniya dlya ledovykh kart* [Nomenclature of sea ice. Conventional signs for ice maps]. Leningrad, Gidrometeoizdat, 1974. [86] p. [Includes Russian-English and English-Russian terms.]

GLACIAL GEOLOGY

- AARTOLAHTI, T. Ring ridge hummocky moraines in northern Finland. *Fennia*, 134, 1974, 22 p. [Form, composition, structure, age and location studied. Appear to be dead-ice formations, being laid down as ice sheet melted.]
- AGRELL, H. Glaciation and deglaciation in the Sommen-Åsunden region, southeastern Sweden. *Bulletin of the Geological Institutions of the University of Uppsala*, New Series, Vol. 4, Nos. 1-8, 1972, p. 125-87. [Deals with Quaternary ice movements and till distribution, features left by Baltic ice, morphology, stratigraphy and distribution of glacio-fluvial deposits, and periglacial deposits.]
- ANDREWS, J. T. Cainozoic glaciations and crustal movements of the Arctic. (In Ives, J. D., and Barry, R. G., ed. *Arctic and alpine environments*. London, Methuen, [c1974], p. 277-317.) [Deals with number and timing of events since Tertiary, presenting a detailed treatment of events for the Wisconsin stage. Discusses response of Arctic regions to glacio-isostatic and eustatic movements.]
- ANDREWS, J. T., and others. Multiple tills, radiometric ages, and assessment of the Wisconsin glaciation in eastern Baffin Island, N.W.T., Canada: a progress report, [by] J. T. Andrews, B. J. Szabo and W. Isherwood. *Arctic and Alpine Research*, Vol. 7, No. 1, 1975, p. 39-59.
- BERGSTRÖM, E. Den prärecenta lokalglaciationens utbredningshistoria inom Skanderna. *Stockholms Universitet. Naturgeografiska Institutionen. Forskningsrapport 16*, 1973, vii, 214 p. [History of local glaciation in Norwegian and north Swedish mountains before post-glacial climatic optimum in 8 100 B.P. English summary, p. 193-204.]
- BLAKE, W., jr. Glacial geological investigations in northwestern Greenland. Project 670031. *Canada. Geological Survey. Paper 75-1, Pt. A*, 1975, p. 435-39. [Study of glacial and marine deposits on Saunders Ø and Carey Øer, with some conclusions on glacial history of these islands.]
- BOLTON, G. S., and DENT, D. L. The nature and rates of post-depositional changes in recently deposited till from south-east Iceland. *Geografiska Annaler*, Vol. 56A, Nos. 3-4, 1974, p. 121-34. [Observations at retreating frontal margin of Breiðamerkurjökull.]
- BOLTON, G. S., and others. Subglacial shearing and crushing, and the role of water pressures in tills from south-east Iceland, by G. S. Bolton, D. L. Dent and E. M. Morris. *Geografiska Annaler*, Vol. 56A, Nos. 3-4, 1974, p. 135-45. [Observations at retreating frontal margin of Breiðamerkurjökull.]
- CALDER, N. Arithmetic of ice ages. *Nature*, Vol. 252, No. 5480, 1974, p. 216-18. [Suggests ice age began 5 000 years ago and will end 119 000 years from now.]

- CARRARA, P. E. The ice-cored moraines of Akudnirmuit Glacier, Cumberland Peninsula, Baffin Island, N.W.T., Canada. *Arctic and Alpine Research*, Vol. 7, No. 1, 1975, p. 61-67. [Describes and dates these four moraines and discusses their significance.]
- CHAPPELL, J. Relationships between sealevels, ^{18}O variations and orbital perturbations, during the past 250,000 years. *Nature*, Vol. 252, No. 5480, 1974, p. 199-202. [Sea-level changes are synchronous with precessional changes in solar radiation when orbital eccentricity is large. Oxygen-isotope variations in deep-sea cores correspond in timing but not in amplitude, reflecting changing isotopic composition of Pleistocene ice sheets.]
- CROOT, D. G. The morphology and evolution of an esker in Spitsbergen. *Norsk Polarinstitutt. Årbok* 1973 [pub. 1975], p. 237-39. [Conditions at Battybreen, Dicksonalen, in 1973 compared with air photographs from 1966 and 1969.]
- DAUVILLIER, A. Les glaciations géologiques, le paléomagnétisme et le problème des neutrinos solaires. *Bulletin de la Société Royale des Sciences de Liège*, An. 43, Nos. 1-2, 1974, p. 35-39. [Suggestion that thermal neutrinos cause palaeomagnetic inversions and glaciations.]
- DELEAU, P.-C. Essai sur la formation et l'évolution du lac d'Annecy. Jalonnement du glacier Beaufort-Roseland vers Annecy. *Revue de Géographie Alpine*, Tom. 63, Fasc. 3, 1974, p. 381-93. [Some observations on the glacial geology and Quaternary glaciation of this area of France.]
- DERBYSHIRE, E. The bathymetry of Jökulsárlón, south-east Iceland. *Geographical Journal*, Vol. 140, Pt. 2, 1974, p. 269-74. [Presents results of bathymetric survey of largest proglacial lake of Breiðamerkurjökull in form of chart of ice-free part of lake in July 1970.]
- DIONNE, J.-C. The eastward transport of erratics in James Bay area, Quebec. *Revue de Géographie de Montréal*, Vol. 28, No. 4, 1974, p. 453-57. [Criticizes Lee's theory that erratics were transported by glaciers with an eastward flow.]
- DREDGE, L. Surficial geology, Sept Îles-Cap Chat. Project 710083. Canada. *Geological Survey. Paper* 75-1, Pt. A, 1975, p. 401. [Observations in this area north of St. Lawrence River give indication of direction of flow of early ice mass.]
- DROZDOWSKI, E. Geneza Basenu Grudziądzkiego w świetle osadów i form glacialnych [Genesis of the Grudziądz basin in the light of its deposits and glacial forms]. *Prace Geograficzne*, Nr. 104, 1974, 139 p. [Lower part of the Wisła (Vistula) valley, Poland. English summary, p. 129-36.]
- DUBOIS, J.-M. Phases et formes de déglaciation du bassin du Bury, Estrie, Québec. *Revue de Géographie de Montréal*, Vol. 28, No. 4, 1974, p. 389-406. [Discusses nature of ground, till, and processes of downwasting.]
- DUBOIS, J.-M. Le quaternaire de la côte nord de l'estuaire maritime du Saint-Laurent. Convention de recherche 1135-D13-4-1/74. Canada. *Geological Survey. Paper* 75-1, Pt. A, 1975, p. 403-05. [Study of landforms suggest direction of flow of Quaternary ice sheet in this area.]
- FILLON, R. H. Geomorphology and glacial history of Hamilton Bank, Labrador Shelf. Project 730076. Canada. *Geological Survey. Paper* 75-1, Pt. A, 1975, p. 167-69. [Freshness and distribution of relict glacial landforms, markedly end moraines, suggest entire bank was glaciated during late Wisconsin.]
- FLIRI, F. Der zentralalpine Bänder-ton von Schabs (Südtirol). *Zeitschrift für Gletscherkunde und Glazialgeologie*, Bd. 9, Ht. 1-2, 1973, p. 231-35. [Discusses these Quaternary sediments in relation to chronology of glaciation in the Alps.]
- FRAKES, L. A., and others. Late Paleozoic glaciation: part VI, Asia, [by] L. A. Frakes, E. M. Kemp, J. C. Crowell. *Geological Society of America. Bulletin*, Vol. 86, No. 4, 1975, p. 454-64. [Late Palaeozoic deposits known only in peninsular India; possible deposits rafted by shore ice in Siberia.]
- GALON, R., ed. Scientific results of the Polish geographical expedition to Vatnajökull (Iceland), 1968. A collection of reports by the research groups. *Geographia Polonica*, Vol. 26, 1973, 312 p. + maps [in separate folder]. [Expedition devoted mainly to glacial geology. Contents: R. Galon and J. Szupryczyński, "The Polish geographical expedition to Vatnajökull (Iceland) June 5 to September 7, 1968", p. 5-14; R. Galon, "Geomorphological and geological analysis of the proglacial area of Skeidarárjökull. Central section", p. 15-56; M. Bogacki, "Geomorphological and geological analysis of the proglacial area of Skeidarárjökull. Central western and eastern sections", p. 57-88; K. Klimck, "Geomorphological and geological analysis of the proglacial area of the Skeidarárjökull. Extreme eastern and extreme western sections", p. 89-113; S. Jewtuchowicz, "The present-day marginal zone of Skeidarárjökull", p. 115-37; R. Galon, "A synthetic description of deposits and landforms observed on the proglacial area of Skeidarárjökull. Conclusions with regard to the age of the deposits and the way in which deglaciation is proceeding", p. 139-50; T. Konysz, "Report on the photogrammetric surveys made by the Polish expedition in 1968 on the forefield of the Skeidarárjökull", p. 151-55; G. Wójcik, "The results of the meteorological investigations on the forefield of Skeidarárjökull", p. 157-83; G. Wójcik, "Glaciological studies on the Skeidarárjökull", p. 185-208; Z. Churski, "Hydrographic features of the proglacial area of Skeidarárjökull", p. 209-54; S. Kozarski and J. Szupryczyński, "Glacial forms and deposits in the Sidujökull deglaciation area", p. 255-311.]
- GANGLOFF, P. Les structures cylindriques et l'évolution géomorphologique d'une plage tardiglaciaire à Saint-Jérôme, Québec. *Revue de Géographie de Montréal*, Vol. 28, No. 4, 1974, p. 357-73. [Describes structures and how they were formed, possibly 10 300 years B.P.]
- GENES, A. N. Glacial geology of Stord Island, Norway. *Dissertation Abstracts International*, B, Vol. 35, No. 3, 1974, p. 1295-B-96-B. [Studies made to determine chronology and extent of Pleistocene glaciation in Bergen district. Abstract of Ph.D. thesis, Syracuse University, 1973. University Microfilms order no. 74-17576.]
- GRANT, D. R. Surficial geology of northern Cape Breton Island. Project 700056. Canada. *Geological Survey. Paper* 75-1, Pt. A, 1975, p. 407-08. [Great variety of glacial materials and landforms present in this part of Nova Scotia.]
- GROGGER, P. K. Glaciation of the high Uintas primitive area, Utah, with emphasis on the northern slope. *Dissertation Abstracts International*, B, Vol. 35, No. 3, 1974, p. 1296-B-97-B. [Four glacial advances identified

- during Pleistocene. Abstract of Ph.D. thesis, University of Utah, 1974. University Microfilms order no. 74-20781.]
- GUSTAVSON, T. C. Sedimentation on gravel outwash fans, Malaspina Glacier foreland, Alaska. *Journal of Sedimentary Petrology*, Vol. 44, No. 2, 1974, p. 374-89. [Observations on two large melt-water streams in order to understand sedimentary processes active on braided outwash fans.]
- HASTENRATH, S. On the Pleistocene glaciation of the Cordillera de Talamanca, Costa Rica. *Zeitschrift für Gletscherkunde und Glazialgeologie*, Bd. 9, Ht. 1-2, 1973, p. 105-21. [Suggests Pleistocene snow line at 3 500 m. Describes moraines and periglacial phenomena, and discusses course of Pleistocene glaciation.]
- HEUBERGER, H. Alpine Quaternary glaciation. (In Ives, J. D., and Barry, R. G., ed. *Arctic and alpine environments*. London, Methuen, [c1974], p. 319-38.) [Reviews current knowledge, comparing Alps and Rocky Mountains and mentioning problems concerning interior Alps. Lists post-glacial glacier advances since 9 000 B.P.]
- HILLAIRE-MARCEL, C. La déglaciation au nord-ouest de Montréal: données radiochronologiques et faits stratigraphiques. *Revue de Géographie de Montréal*, Vol. 28, No. 4, 1974, p. 407-17. [Discusses course of events in this area following Wisconsin glaciation.]
- HOLTEDAHL, O. Noen glasifluviale isrand-avsetninger i den sydlige del av Glomma-vassdragnets (nåværende) dreneringsområde. Med en del berggeologisk-morfologiske data fra de nordlige Øyeren-trakter. *Norges Geologiske Undersøkelse*, Nr. 306, 1974, 85 p. [Discusses glacio-fluvial marginal deposits in southern part of present drainage area of Glomma river system, southern Norway, and presents data on geology and morphology of northern Øyeren district. English abstract, p. 1.]
- [ICELAND: GLACIAL GEOLOGY.] *University of Sheffield earth sciences expedition to Iceland (Sólheimajökull). 21st June-30th July, 1973*. [Sheffield], University of Sheffield, Dept. of Geology, 1974. 74 leaves. [Mostly geology and glacial geology in south Iceland.]
- IVES, J. D., and others. Growth and decay of the Laurentide ice sheet and comparisons with Fenno-Scandinavia, [by] J. D. Ives, J. T. Andrews and R. G. Barry. *Naturwissenschaften*, Jahrg. 62, Ht. 3, 1975, p. 118-25 [Outlines early work and reviews field data for Labrador-Ungava and Baffin Island in a climatological context. Proposes alternative model and compares with Fenno-Scandinavia.]
- KENNETT, J. P., and SHACKLETON, N. J. Laurentide ice sheet meltwater recorded in Gulf of Mexico deep-sea cores. *Science*, Vol. 188, No. 4184, 1975, p. 147-50. [Evidence shows major influx of isotopically light glacial melt water occurred during late Wisconsin via Mississippi River from ice sheet 2 000 km north.]
- KNEUSS, W. Höhlenbärenknochen aus der Tischoferhöhle (Kaisertal bei Kufstein-Nordtirol) mit ¹⁴C-Methode altersbestimmt. *Zeitschrift für Gletscherkunde und Glazialgeologie*, Bd. 9, Ht. 1-2, 1973, p. 237-38. [¹⁴C dating of cave bear's bone shows age of 27 875 ± 485 years B.P., further evidence of ice-free valley during Würm interstadial.]
- KRZEMIŃSKI, T. Geneza młodoplejstocenijskiej rzeźby glacialnej w dorzeczu środkowej Warty [The formation of glacial relief during the upper Pleistocene in the basin of the middle Warta]. *Acta Geographica Lodziensia*, Nr. 33, 1974, p. 1-167. [Describes effects of Quaternary deglaciation in this area of Poland. French summary, p. 151-67.]
- LAGERCRANTZ, C.-L. Om den glaciala erosion en i Kilpisjärvi sjöbäcken. *Terra*, Vol. 86, No. 4, 1974, p. 175-80. [Study of glacial erosion in basin of lake in north-western Finnish Lapland, based on soundings made in 1938-39 and on recent maps. English abstract, p. 175.]
- LORTIE, G. Direction d'écoulement des glaciers du pléistocène des cantons de l'est, Québec. Project 740094. *Canada. Geological Survey. Paper 75-1, Pt. A*, 1975, p. 415-16. [Presents preliminary findings from this study of Quaternary glacier flow in a limited area of Quebec.]
- McLAREN, P. Under-ice diving observations in the coastal environments of southeast Melville and western Byam Martin islands. Project 730020. *Canada. Geological Survey. Paper 75-1, Pt. A*, 1975, p. 475-77. [Study of bottom environments, including effects of ice such as scouring and "scour moraines".]
- MAHANEY, W. C., ed. *Quaternary environments: proceedings of a symposium. First York University Symposium on Quaternary Research, 1974*. Toronto, York University. Atkinson College, 1974. vii, 318 p. (Geographical Monographs, No. 5.) [Includes the following papers: J. Terasmae, "An evaluation of methods used for reconstruction of Quaternary environments", p. 5-32; M. M. Miller and J. H. Anderson, "Out-of-phase Holocene climatic trends in the maritime and continental sectors of the Alaska-Canada Boundary Range", p. 33-58; E. Nielsen, "A mid-Wisconsinan glacio-marine deposit from Nova Scotia", p. 59-60; R. F. Madole, "Quaternary research methodologies applied to delimiting natural hazards in mountainous Colorado", p. 79-98; D. R. Coates and J. T. Kirkland, "Application of glacial models for large-scale terrain derangements", p. 99-136; D. H. Cadwell, "Jökulhlaup lakes on existing glaciers as an aid to interpretation in Pleistocene stratigraphy", p. 137-52; E. P. Kiver, "Holocene glaciation in the Willowa Mountains, Oregon", p. 169-95; W. C. Mahaney, "Soil stratigraphy and genesis of neoglaciation deposits in the Arapaho and Henderson cirques, central Colorado Front Range", p. 197-240; W. W. Pettapiece and S. C. Zoltai, "Soil environments in the western Canadian subarctic", p. 279-92; V. K. Jones, "Late-neoglaciation regimes of an inland cirque glacier and their paleoclimatic implications", p. 293-94; J. Williams, "Simulation of the atmospheric circulation with glacial period boundary conditions: moisture balance of the earth-atmosphere system", p. 295-310.]
- MASUREL, Y. Aspects morphologiques de l'île d'Axel Heiberg (Arctique canadien septentrional). *Revue de Géographie Alpine*, Tom. 62, Fasc. 3, 1974, p. 369-80. [Describes glaciological work, with emphasis on glacial geology, carried out by McGill University in this area, mentioning Baby, White and Thompson glaciers.]
- PIPER, D. J. W. Upper Cenozoic glacial history south of the Grand Banks of Newfoundland. *Canadian Journal of Earth Sciences*, Vol. 12, No. 3, 1975, p. 503-08. [Study to determine history of ice rafting in this area.]
- PLUMET, P. L'archéologie et le relèvement glacio-isostatique de la région de Poste-de-la-Baleine, Nouveau-Québec. *Revue de Géographie de Montréal*, Vol. 28, No. 4, 1974, p. 443-47. [Compares archaeological with geomorphological data obtained from two estimates relating to rate of glacio-isostatic uplift in this area.]

- PORTER, S. C. Glaciation limit in New Zealand's Southern Alps. *Arctic and Alpine Research*, Vol. 7, No. 1, 1975, p. 33-37. [Regional survey made of glaciation limit to obtain information on altitudinal distribution of glaciers. Data provide insight into relative significance of topographic and climatic controls on present glacier distribution.]
- REIMNITZ, E., and others. Strudel scour: a unique Arctic marine geologic phenomenon, [by] E. Reimnitz, C. A. Rodeick and S. C. Wolf. *Journal of Sedimentary Petrology*, Vol. 44, No. 2, 1974, p. 409-20. [Various methods used to study scour features in sea bottom caused by fresh-water flooding of Beaufort Sea ice by northern Alaskan rivers in spring melt followed by draining of overflow through holes and cracks in ice producing depressions in underlying sediments.]
- RONDOT, J. L'épisode glaciaire de Saint-Narcisse dans Charlevoix, Québec. *Revue de Géographie de Montréal*, Vol. 28, No. 4, 1974, p. 375-88. [Study of moraines and extensive glacial deposits, probably formed over 12 000 years B.P.]
- RUKHINA, YE. V. O spornyykh voprosakh pokrovno-lednikovoy i driftovoy teorii [On the vexed question of ice cover and ice drift theory]. *Vestnik Leningradskogo Universiteta. Seriya Geologiya i Geografiya*, 1974, Vyp. 3, p. 56-61. [Geological evidence favours arguments supporting theory of continental glaciation. English summary, p. 61.]
- RYDER, J. M. Quaternary geology—terrain inventory, Lytton map-area, British Columbia (92 I/SW). Project 740066. *Canada. Geological Survey. Paper 75-1, Pt. A*, 1975, p. 419-20. [General observations of glacial geology.]
- SCHLÜCHTER, C. Die Gliederung der letzteiszeitlichen Ablagerungen in Aartal südlich von Bern (Schweiz). *Zeitschrift für Gletscherkunde und Glazialgeologie*, Bd. 9, Ht. 1-2, 1973, p. 123-41. [Presents reconstruction of Würm glaciation from investigations of deposits in the Aar river valley.]
- SCHUBERT, C., and VALASTRO, S. Late Pleistocene glaciation of Páramo de La Culata, north-central Venezuelan Andes. *Geologische Rundschau*, Bd. 63, Ht. 2, 1974, p. 516-38. [Describes glacial features and discusses age of formation.]
- SHILTS, W. W., and McDONALD, B. C. Dispersal of clasts and trace elements in the Windsor esker, southern Quebec. Project 690095. *Canada. Geological Survey. Paper 75-1, Pt. A*, 1975, p. 495-99. [Detailed description.]
- SINDRE, E. Ice movement in the Vossestrand-Vikafjell area, western Norway. *Norges Geologiske Undersøkelse*, Nr. 311, *Bulletin* 25, 1974, p. 25-34. [Stone counting of till and analysis of glacial striae used to determine Quaternary ice movement directions.]
- SOLLID, J. L., and SØRBEL, L. Younger Dryas ice-marginal deposits in Trøndelag, central Norway. *Norsk Geografisk Tidsskrift*, Bd. 29, Ht. 1, 1975, p. 1-9. [Deposits mapped on basis of morphological studies and analysis of air photographs.]
- STALKER, A. M. The large interdrift bedrock blocks of the Canadian prairies. Project 740089. *Canada. Geological Survey. Paper 75-1, Pt. A*, 1975, p. 421-22. [Preliminary results of study of blocks lying between till and other drift in attempt to explain their origin.]
- STUIVER, M., and others. Erroneous date for Chilean glacial advance, [by] M. Stuiver, J. H. Mercer, H. Moreno R. *Science*, Vol. 188, No. 4183, 1975, p. 73-74. [Comments on date suggested by Mercer and Laugenic, *ibid.*, Vol. 182, No. 4116, 1973, p. 1017-19.]
- VALADAS, B., and VEYRET, Y. Quelques aspects des modèles d'origine glaciaire, périglaciaire et nivale sur les confins méridonaux de la Margeride. *Revue de Géomorphologie Dynamique*, 23^e An., No. 4, 1974, p. 163-77. [One ancient and one more recent glaciation identified in this region of France, but absolute chronology not yet possible.]
- WAITT, R. B., jr. Late Pleistocene alpine glaciers and the Cordilleran ice sheet at Washington Pass, North Cascade Range, Washington. *Arctic and Alpine Research*, Vol. 7, No. 1, 1975, p. 25-32. [Presents observations on glacial erosion and striated erratics in this area and discusses post-glaciation ice sheets.]
- WALCOTT, R. I., and CRAIG, B. G. Uplift studies, southeastern Hudson Bay. *Canada. Geological Survey. Paper 75-1, Pt. A*, 1975, p. 455-56. [Rate of emergence of land during last few thousand years deduced from study of marine shells.]
- WEBB, P. N. Derivation of the older moraines in Beacon Valley, Antarctica. *New Zealand Journal of Geology and Geophysics*, Vol. 17, No. 3, 1974, p. 723-28. [Comments upon paper by Linkletter, Bockheim and Ugolini, *ibid.*, Vol. 16, No. 1, 1973, p. 90-108. Reply by these authors, p. 727-28.]
- WORSLEY, P. Some observations on lake ice-push features, Grasvatn, northern Scandinavia. *Norsk Geografisk Tidsskrift*, Bd. 29, Ht. 1, 1975, p. 11-19. [Artificial lowering of lake revealed features considered to have been formed by wind-powered ice-floes.]

FROST ACTION ON ROCKS AND SOIL. FROZEN GROUND. PERMAFROST

- AFANASENKO, V. YE., and others. Hidrogeologicheskiye usloviya Selennyakhskey nalozhennoy vpadiny i sopredel'nykh s ney gornyykh sooruzheniy [Hydrological conditions of Selennyakh superimposed depression and adjacent mountain structures]. [By] V. Ye. Afanassenko, N. N. Romanovskiy, M. M. Koreysya. *Merzlotnyye Issledovaniya*, Vyp. 14, 1974, p. 91-104. [Permafrost conditions and underground water system in Yakutskaya A.S.S.R.]
- AGUIRRE-PUENTE, J., and others. Frost heaving and the classification of soils in accordance with their frost susceptibility, by J. Aguirre-Puente, A. Dupas and A. Philippe. *Frost i Jord*, Nr. 14, 1974, p. 41-47. [Translated from the original French in *Bulletin de Liaison des Laboratoires des Ponts et Chaussées*, No. 68, 1973.]
- ALEKSEYEV, V. P. Naledi Sibiri i dal'nego vostoka [Naleds of Siberia and the far east]. *Sibirskiy Geograficheskiy Sbornik*, [No.] 8, 1974, p. 5-68. [General survey of naleds in Siberia, including the eastern region. English abstract, p. 278.]

- APOSTOLOPOULOS, C., and others. Theoretical investigation of some possible frost-resistant pavement constructions in relation to their thermal properties, by C. Apostolopoulos, H. Kuhle and W. Schneider. *Frost i Jord*, Nr. 12, 1973, p. 37-43. [Constructions considered, in descending order of frost resistance, were those with non-load bearing and load bearing insulations, conventional full-depth asphalt constructions. Text also in German, p. 29-35.]
- ARKHANGELOV, A. A., and SHAPOSHNIKOVA, YE. A. Priblizhennaya otsenka paleomerzlotnykh usloviy formirovaniya nizhnepleistotsenovnykh otlozheniy vostochnoy chasti Primorskoy nizmennosti [Approximate estimation of palaeo-permafrost conditions of formation of lower Pleistocene deposits in the eastern Primorskoy lowland]. *Merzlotnyye Issledovaniya*, Vyp. 14, 1974, p. 76-80. [Yakutskaya A.S.S.R.]
- BARSCHI, D. Refraktionsseismische Bestimmung der Obergrenze des gefrorenen Schuttkörpers in verschiedenen Blockgletschern Graubündens, Schweizer Alpen. *Zeitschrift für Gletscherkunde und Glazialgeologie*, Bd. 9, Ht. 1-2, 1973, p. 143-67. [Describes seismometric method for determining upper boundary of frozen debris core in rock glaciers and presents some results and conclusions in relation to conditions in the Swiss Alps.]
- BIRD, J. B. Geomorphic processes in the Arctic. (In Ives, J. D., and Barry, R. G., ed. *Arctic and alpine environments*. London, Methuen, [c1974], p. 703-20.) [Reviews processes affecting polar landscapes, referring to periglacial features.]
- BOYDELL, A. N., and others. Terrain inventory and land classification, Boothia Peninsula and northern Keewatin. Project 740074, [by] A. N. Boydell, K. A. Drabinsky and J. A. Netteville. *Canada. Geological Survey. Paper 75-1*, Pt. A, 1975, p. 393-95. [Includes study of characteristics of permafrost terrain and distribution of ground ice with respect to sediment types.]
- BOYKOV, C. A. Prodol'noye elektropofilirovaniye po dnishcham vodotokov v tselyakh kartirovaniya talykh i merzlykh porod [Mapping of taliks and permanently frozen rocks in the bottoms of river valleys by means of electrical profiling]. *Merzlotnyye Issledovaniya*, Vyp. 14, 1974, p. 163-66.
- BROWN, R. J. E., and KUPSCH, W., ed. Permafrost terminology. *Canada. National Research Council. Associate Committee on Geotechnical Research. Technical Memorandum No. 111*, 1974, 62 p. (NRCC 14374.) [Defines common terms.]
- CAILLEUX, A. Une naldé d'embouchure à Poste-de-la-Baleine, nouveau Québec. *Revue de Géographie de Montréal*, Vol. 28, No. 4, 1974, p. 458-60. [Describes naldé, which may be one of the first to be described in North America.]
- CHIZHOVA, N. I. Geokhimiya prirodnykh vod Yano-Omoloy'skogo mezhdurech'ya [Geochemistry of natural waters of the Yano-Omoloy interfluvium]. *Merzlotnyye Issledovaniya*, Vyp. 14, 1974, p. 109-15. [Permafrost area of Yakutskaya A.S.S.R.]
- CRAMPTON, C. B. Linear-patterned slopes in the discontinuous permafrost zone of the central Mackenzie River valley. *Arctic*, Vol. 27, No. 4, 1974, p. 265-72. [Discusses effect of aspect of slope on occurrence and depth of permafrost.]
- DIONNE, J.-C. Cryosols avec triage sur rivage et fond de lacs, Québec central subarctique. *Revue de Géographie de Montréal*, Vol. 28, No. 4, 1974, p. 323-42. [Describes and discusses formation of patterned ground in the Lake Le Grand area.]
- FÆROYVÍK, F. Frostsikre gulv på grunnen. *Frost i Jord*, Nr. 14, 1974, p. 49-57. [Discusses development of simple frost-protected foundations for practical use, based on computer calculations for normally heated family houses in four Norwegian towns. English summary, p. 57.]
- FRENCH, H. M. Pingo investigations and terrain disturbance studies, Banks Island, District of Franklin. *Canada. Geological Survey. Paper 75-1*, Pt. A, 1975, p. 459-64. [Several pingos were sectioned and examined. Gullying as result of off-road vehicle movement was studied.]
- FRIVIK, P.-E. Termisk analyse av frost i jord. Del 1. Elementer og prinsipper. *Frost i Jord*, Nr. 9, 1973, p. 21-26. [Discusses decisive factors and principles involved in thermal analysis of frost in soils with reference to frost protected constructions. English summary, p. 25-26.]
- FYRHÅKE, L. Samband mellan tjälning och rörelser hos grundmurar i småhus; inverkan av markisolering med mineralull. *Statens Institut för Byggnadsforskning. Rapport, R20* : 1973, [1973], [iv], 26 p. [Discusses correlation between frost heave and movements in the foundation walls of houses and effect of ground insulation using mineral wool. English summary, p. iii-iv.]
- GANDAHL, R. Styrencellplast i väg. *Frost i Jord*, Nr. 10, 1973, p. 5-12. [Presents results of field tests of polystyrene foam as road insulating material. English summary, p. 11-12.]
- GARAGULYA, L. S., and others. Osnovnyye zadachi merzlotnykh issledovaniy dlya proyektirovaniya i stroitel'stva gazoprovodov v rayonakh kraynego severa [Main problems of permafrost investigations for gas pipe projection and construction in regions of the far north]. [By] L. S. Garagulya, N. F. Poltev [and] V. V. Spiridonov. *Merzlotnyye Issledovaniya*, Vyp. 14, 1974, p. 3-11. [General outline of problems.]
- GATTO, L. W., and ANDERSON, D. M. Alaskan thermokarst terrain and possible Martian analog. *Science*, Vol. 188, No. 4185, 1975, p. 255-57. [Terrain recognized on ERTS-1 imagery was formed by degrading permafrost in manner similar to one of processes postulated for development of Martian fretted terrain.]
- GELL, A. Tension-crack ice, icing-mound ice, Tuktoyaktuk coast, District of Mackenzie (107 C). *Canada. Geological Survey. Paper 75-1*, Pt. A, 1975, p. 465-66. [Discusses tension-crack ice which forms in cracks produced by mechanical rupture of overburden when pingos grow, and icing-mound ice formed by injection of water from depth into base of active layer.]
- GILL, D. Influence of white spruce trees on permafrost-table microtopography, Mackenzie River delta. *Canadian Journal of Earth Sciences*, Vol. 12, No. 2, 1975, p. 263-72. [Permafrost table is depressed in conical shape surrounding stem of each tree.]
- GOVORUKHA, L. S. Ob intensivnosti solifyuktsii na o. King-Dzhordzh (Vaterloo) [Intensity of solifluction on King George Island (Waterloo)]. *Informatsionnyy Byulleten' Sovetskoy Antarkticheskoy Ekspeditsii*, No. 89, 1974, p. 10-14.

- GUNDERSEN, P. Frostisolering av rørgrøfter. *Frost i Jord*, Nr. 13, 1974, p. 37-47. [Discusses insulation of trenches for service pipes. English summary, p. 47.]
- HAEBERL, W. Die Basis-Temperatur der winterlichen Schneedecke als möglicher Indikator für die Verbreitung von Permafrost in den Alpen. *Zeitschrift für Gletscherkunde und Glazialgeologie*, Bd. 9, Ht. 1-2, 1973, p. 221-27. [Suggests that bottom temperature of winter snow cover could be used as indicator of distribution of permafrost in the Alps.]
- HANSEN, P. B. Frostbeskyttelse av eksisterende vegger med toppisoleringmetoden. *Frost i Jord*, Nr. 9, 1973, p. 7-19. [Describes frost protection of existing roads using boards of insulating material of high compressive strength placed directly on road with thin layer of asphaltic gravel on top of the boards. In English, p. 15-19.]
- HEIDMANN, L. J. An investigation into the causes and prevention of frost heaving of forest tree seedlings. *Dissertation Abstracts International*, B, Vol. 35, No. 3, 1974, p. 1143-B. [Frost heaving was reduced by ploughing with and without addition of chemicals; survival was better on ploughed plus chemical plots. Abstract of Ph.D. thesis, University of Arizona, 1974. University Microfilms order no. 74-20256.]
- HERSHFIELD, D. M. The frequency of freeze-thaw cycles. *Journal of Applied Meteorology*, Vol. 13, No. 3, 1974, p. 348-54. [Data from 1 300 climatic summaries used to construct map for United States showing annual frequency of freeze-thaw cycles.]
- ISAACS, R. M. Geotechnical studies of permafrost in the Fort Good Hope-Norman Wells region, N.W.T. *Canada. Task Force on Northern Oil Development. Environmental-Social Committee, Northern Pipelines. Report No. 74-16*, 1974, iv, 212 p. [Presence of considerable ice in all terrain types discussed with reference to thermal behaviour in relation to pipeline and associated constructions.]
- IVASHENKO, I. N., and VRACHEV, V. V. Vliyaniye moroznogo issusheniya na deformiruyemost' merzlykh gruntov pri trekhosnom szhatii [Influence of frost drying in deformation of frozen soils under triaxial pressure]. *Merzlotnyye Issledovaniya*, Vyp. 14, 1974, p. 204-08.
- IVES, J. D. Permafrost. (In Ives, J. D., and Barry, R. G., ed. *Arctic and alpine environments*. London, Methuen, [c1974], p. 157-94.) [Survey of current knowledge.]
- JANSON, L.-E. Undersökning av frysrisker för vattenledningar ovanför tjalgränsen. *Frost i Jord*, Nr. 14, 1974, p. 59-67. [Tests on water mains show foundation depths can be reduced if high quality frost insulation is used. English summary, p. 67.]
- JOHANSEN, Ø. Beregningsmetode for varmeledningsevnen av fuktige og frosne jordarter. Del 2. *Frost i Jord*, Nr. 10, 1973, p. 13-28 + [4] p. [Describes method for calculation of thermal conductivity of damp and frozen soils. English summary, p. 25-28.]
- KINOSITA [i.e. KINOSHITA], S. Water migration in the soil during frost heaving. *Frost i Jord*, Nr. 11, 1973, p. 37-40. [Presents equation for calculation of water migration, based on experiments in Hokkaido.]
- KNUTSON, Å. Praktisk bruk av bark i vegbygging. *Frost i Jord*, Nr. 10, 1973, p. 29-44. [Results of field and laboratory work in Norway on use of bark as frost accumulating road base. Water in bark must freeze before frost can penetrate into sub-soil. English summary, p. 39-44.]
- KONDRAT'YEVA, K. A. K voprosu o sledakh promerzaniya i ottaivaniya v nizhnechetvertichnykh otlozheniyakh basseyna r. Khromy r. Khromy [On freezing and thawing traces in lower Quaternary deposits of the Khroma river basin]. *Merzlotnyye Issledovaniya*, Vyp. 14, 1974, p. 67-75. [Yakutskaya A.S.S.R.]
- KONDRAT'YEVA, K. A. Novyye dannyye ob obnazhenii Mus-Khaya na r. Yane [New data on the Mus-Khaya outcrop on the Yana river]. *Merzlotnyye Issledovaniya*, Vyp. 14, 1974, p. 56-66. [Veins of ice in lake-alluvial deposits along river banks in Yakutskaya A.S.S.R.]
- KORSUNSKIY, M. B., and others. Determination of temperature and depth of frost penetration in pavements and subgrades, by M. B. Korsunskiy, V. N. Gayvoronskiy and P. D. Rossovskiyy. *Frost i Jord*, Nr. 13, 1974, p. 49-52. [Presents results of tests on road with asphalt surface.]
- KORSUNSKIY, M. B., and others. Moisture content and frost heaving of highway subgrade soils, by M. B. Korsunskiy, V. N. Gayvoronskiy, P. D. Rossovskiyy. *Frost i Jord*, Nr. 12, 1973, p. 13-16. [Results of investigations on test road.]
- KUDRYAVTSEV, V. A., and others. Vliyaniye fizicheskikh i strukturnoadsorbtsionnykh kharakteristik gruntov na protsess sublimatsii l'da v nikh [Influence of physical and structural-adsorption characteristics of soils on the ice sublimation process in them]. [By] V. A. Kudryavtsev, Ye. D. Yershov, V. V. Gurov, Ye. Z. Kuchukov, Yu. P. Akimov. *Merzlotnyye Issledovaniya*, Vyp. 14, 1974, p. 214-21.
- KUDRYAVTSEV, V. A., and others. Zakonomernosti formirovaniya sezonno- i mnogoletnemerzlykh gornyykh porod v rayone Srednego Priangar'ya [Regularities of seasonal and perennial permafrost development in the middle Angara river region]. [By] V. A. Kudryavtsev, L. N. Maksimova, O. G. Boyarskiy, V. A. Dubrovin [and] M. I. Zabolotskaya. *Merzlotnyye Issledovaniya*, Vyp. 14, 1974, p. 22-34. [Irkutskaya Oblast'.]
- LUK'YANOV, V. S. Application of hydraulic analogue method to investigation of physical processes in soils. *Frost i Jord*, Nr. 11, 1973, p. 11-14. [Method used for analysing thermal and filtration processes in soils in connection with construction work in permafrost environments.]
- MCDONALD, G. N. Snow and ice and the trans-Alaska pipeline. *Proceedings of the Western Snow Conference*, 42nd annual meeting, 1974, p. 103-05. [Very general outline of problems of constructing pipeline over permafrost, icings and naleds, and effects on ecology.]
- MACKAY, J. R. Freezing processes at the bottom of permafrost, Tuktoyaktuk Peninsula area, District of Mackenzie (107 C). *Canada. Geological Survey. Paper 75-1*, Pt. A, 1975, p. 471-74. [Thermal and physical conditions that have produced ground ice now found in continuous permafrost were studied by examining thin (less than 50 m) permafrost now growing for the first time.]
- MACKAY, J. R. Relict ice wedges, Pelly Island, N.W.T. (107 C/12). *Canada. Geological Survey. Paper 75-1*, Pt. A, 1975, p. 469-70. [Description, with suggestion of age.]
- MACKAY, J. R., and MATHEWS, W. H. Movement of sorted stripes, the Cinder Cone, Garibaldi Park, B.C., Canada. *Arctic and Alpine Research*, Vol. 6, No. 4, 1974, p. 347-59. [Examines frost heave, displacement by

- needle ice, surface wash and drag from snow creep. Growth and ablation of needle ice caused principal down-slope movement.]
- McROBERTS, E. C. Field observations of thawing in soils. *Canadian Geotechnical Journal*, Vol. 12, No. 1, 1975, p. 126-30. [Considers case histories indicating thaw interface proceeds as predicted by simple model. Investigates deviations and compares calculated and measured rates of thaw.]
- McROBERTS, E. C. Some aspects of a simple secondary creep model for deformations in permafrost slopes. *Canadian Geotechnical Journal*, Vol. 12, No. 1, 1975, p. 98-105. [Introduces flow law for ice into model and shows that significant creep deformations can occur in frozen slopes. Suggests secondary creep in ice-rich soils may be faster than in ice alone.]
- McROBERTS, E. C., and MORGENSTERN, N. R. Pore water expulsion during freezing. *Canadian Geotechnical Journal*, Vol. 12, No. 1, 1975, p. 130-41. [Reviews this phenomenon and confirmation by laboratory tests. Discusses implications.]
- McROBERTS, E. C., and NIXON, J. F. Reticulate ice veins in permafrost, northern Canada: discussion. *Canadian Geotechnical Journal*, Vol. 12, No. 1, 1975, p. 159-62. [Comments upon article by J. R. Mackay, *ibid.*, Vol. 11, No. 2, 1974, p. 230-37. Reply by Mackay, p. 163-65.]
- MAKEYEV, O. V., ed. *Pochvennyy kriogenez. K 10 mezhdunarodnomu kongressu pochvovedov. Moskva, 1974* [Soil cryogenesis. For the 10th international congress of soil science. Moscow, 1974]. Moscow, Izdatel'stvo "Nauka", 1974. 244 p. [Collected papers on genesis, geography and regimes of cryogenic soils and problems of increasing their fertility.]
- MELAMED, V. G., and MEDVEDEV, A. V. Ob optimal'nykh usloviyakh segregatsionnogo l'dobrazovaniya v tonkodispersnykh gornykh porodakh [On the optimum conditions of segregational ice-forming in finely dispersed rocks]. *Merzlotnyye Issledovaniya*, Vyp. 14, 1974, p. 12-21.
- MELENT'YEV, V. S. Vertikal'naya yaruchnost' verkhney gidroinamicheskoy zony i oblasti rasprostraneniya ostrovnoy i preryvistoy mnogoletney merzloty (na primere Aldan-Chul'manskogo rayona) [Vertical subdivisions of the upper hydrodynamic zone and regions of insular and fragmental permafrost (e.g. in the Aldan-Chul'man region)]. *Merzlotnyye Issledovaniya*, Vyp. 14, 1974, p. 159-62. [Yakutskaya A.S.S.R.]
- MELENT'YEV, V. S., and NAUMOV, M. S. Landshaftnoye deshifirovaniye noveyshikh razryvnykh narusheniy v tselyakh merzlotno-gidrogeologicheskikh nablyudeniy (na primere ugnosnykh rayonov yuzhnoy Yakutii) [Landscape interpretation of new dislocations with a break in continuity in permafrost hydrogeological studies (e.g. in the south Yakutiya coal-bearing region)]. *Merzlotnyye Issledovaniya*, Vyp. 14, 1974, p. 137-40.
- MEL'NIKOV, P. I., and TOLSTIKHIN, N. I., ed. *Obshcheye merzlotovedeniye* [General permafrost study]. Novosibirsk, Izdatel'stvo "Nauka", 1974. 291 p. [Surveys research during last thirty years.]
- ÖNALP, A. A study of the mechanism of frost heave and stabilization by the use of deflocculating agents. *Frost i Jord*, Nr. 11, 1973, p. 15-30. [Concludes that sodium tripolyphosphate may be regarded as suitable stabilizing agent for frost susceptible soils.]
- OSPENNIKOV, YE. N., and TRUSH, N. I. L'distost' alasnykh i ozero-allyuvial'nykh otlozheniy Yano-Omoloykogo mezhdurech'ya i metodika yeye polevogo opredeleniya [Ice content of *alas* and lake-alluvial deposits of the Yana-Omoloy interfluv and field methods for determining it]. *Merzlotnyye Issledovaniya*, Vyp. 14, 1974, p. 35-42. [Yakutskaya A.S.S.R.]
- PAVLOV, A. V., and OLOVIN, B. A. *Iskusstvennoye ottavivaniye merzlykh porod teplom solnechnoy radiatsii pri razrabotke rossyepy* [Artificial thawing of frozen ground by warm solar radiation during mining of placer deposits]. Novosibirsk, Izdatel'stvo "Nauka", 1974. 182 p. [Presents methods of thawing frozen ground and protection of rocks from freezing, based on studies in Yakutskaya A.S.S.R.]
- PÉWÉ, T. L. Second International Conference on Permafrost—northeast Siberia. *Zeitschrift für Gletscherkunde und Glazialgeologie*, Bd. 9, Ht. 1-2, 1973, p. 253-60. [Detailed account of field trips made after the conference, which was held 15-28 July 1973.]
- PROTROVSKIY, M. V. Problema reshetchatykh struktur i svyazi s nimi merzlotno-gidrogeologicheskikh usloviy [The problem of latticed structures and their connection with permafrost-hydrogeological conditions]. *Merzlotnyye Issledovaniya*, Vyp. 14, 1974, p. 126-36.
- PISSART, A. Banks Island, N.W.T.: pingos, wind action, periglacial structures. Project 640004. *Canada. Geological Survey. Paper 75-1*, Pt. A, 1975, p. 479-81. [Brief description of recent findings in this area.]
- POPOV, A. I., ed. *Problemy kriolitologii. Vyp. 4* [Problems of cryolithology. Vyp. 4]. Moscow, Izdatel'stvo Moskovskogo Universiteta, 1974. 253 p. [Articles on theoretical, methodological and regional problems of cryolithology, with examples from the U.S.S.R.]
- PRICE, L. W., and others. Origin and significance of wet spots on scraped surfaces in the high Arctic. *Arctic*, Vol. 27, No. 4, 1974, p. 304-06. [Describes development and discusses cause of wet spots occurring on polygonal ground cleared for camp sites and air strips.]
- PYSICHEV, N. F., and others. K raschetu glubiny promerzaniya pochvy [Calculation of soil freezing depth]. [By] N. F. Pysichev, B. N. Mel'nikov, O. K. Vostretsov. *Meteorologiya i Gidrologiya*, 1974, No. 6, p. 85-89.
- REFSDAL, G. The use of thermal insulating materials in highway engineering. Results from Norwegian test roads. *Frost i Jord*, Nr. 9, 1973, p. 27-39. [Discusses use of insulating boards made of polystyrene or polyurethane.]
- RETZER, J. L. Alpine soils. (In Ives, J. D., and Barry, R. G., ed. *Arctic and alpine environments*. London, Methuen, [c1974], p. 771-802.) [Brief mention of occurrence of permafrost.]
- RIEGER, S. Arctic soils. (In Ives, J. D., and Barry R. G., ed. *Arctic and alpine environments*. London, Methuen, [c1974], p. 749-69.) [Deals with types of soils, their uses and classification, mentioning features caused by low temperatures.]
- ROMANOVSKIY, N. N., and others. Naled' "ozero Gusinoye" [The naled of Ozero Gusinoye]. [By] N. N. Romanovskiy, V. Ye. Afanasenko, M. M. Koreysha. *Merzlotnyye Issledovaniya*, Vyp. 14, 1974, p. 105-08. [Measures naled and records changes since 1939. Yakutskaya A.S.S.R.]

- SCHMIDT, W. Opportunities for the use of rigid polyurethane foams in roadbuilding to effect savings in frost blanket gravel. *Frost i Jord*, Nr. 12, 1973, p. 9-12. [Compares advantages and disadvantages of methods of applying foams.]
- SCHMIDT, W. Results of insulating a highway test section with rigid polyurethane foams. *Frost i Jord*, Nr. 12, 1973, p. 5-7. [Discusses briefly water absorption, insulating behaviour and load-bearing capacity.]
- SCOTTER, G. W. Permafrost profiles in the continental divide region of Alberta and British Columbia. *Arctic and Alpine Research*, Vol. 7, No. 1, 1975, p. 93-95. [Only the second report of permafrost from this region. Observed summer 1970.]
- SÉGUIN, M. K. État des recherches sur le pergélisol dans la partie centrale de la fosse du Labrador, Québec subarctique. *Revue de Géographie de Montréal*, Vol. 28, No. 4, 1974, p. 343-56. [Discusses applied research on discontinuous permafrost, with particular reference to work at Schefferville.]
- SHAKHUNYANTS, G. M. Soviet experience in handling harmful frost-heaving effects on railways. *Frost i Jord*, Nr. 11, 1973, p. 5-9. [Discusses use of plastic foams.]
- SHUSHERINA, YE. P. Soprotivleniye merzlykh dispersnykh porod i l'da razryvu v oblasti nizkikh temperatur (do -60°C) [Resistance of frozen dispersed rocks and ice to a fracture in regions of low temperature (to -60°C)]. *Merzlotnyye Issledovaniya*, Vyp. 14, 1974, p. 179-89.
- SHUSHERINA, YE. P., and others. Novyye dannyye po mekhanicheskim svoystvam merzlykh gruntov pri nizkikh temperatur (do -55°C) [New data on the mechanical properties of frozen rocks at low temperatures (to -55°C)]. [By] Ye. P. Shusherina, V. V. Vrachev, I. N. Ivashenko. *Merzlotnyye Issledovaniya*, Vyp. 14, 1974, p. 190-95.
- SINHA, A. K. Electromagnetic sounding over layered permafrost terrain. Project 730004. *Canada. Geological Survey. Paper 75-1*, Pt. A, 1975, p. 149-51. [Describes theoretical studies to solve problem of determining electrical constants of a two-layer medium.]
- STORR, D., and FERGUSON, H. L. On the ambiguity of Bowen ratios over freezing and melting surfaces. *Journal of Applied Meteorology*, Vol. 13, No. 4, 1974, p. 509-11. [Draws attention to two different definitions of ratio and favours that which excludes the melt (freezing) term.]
- TAKASHI, T., and others. Tsuchi no ryöketsu-böchö-ritsu ni oyobosu ryöketsu-sokudo, yükö-öryoku no eikyo ni kansuru kenkyü [Experimental study on the influence of freezing speed upon frost heave ratio of soil under constant effective stress]. [By] T. Takashi, M. Masuda [and] H. Yamamoto. *Seppyo*, Vol. 36, No. 2, 1974, p. 49-68. [Presents empirical formula for this and proposes mechanical pump model of freezing surface to explain it. English summary, p. 67-68.]
- TARNOCAL, C., and THIE, J. Permafrost and remote sensing. (In Thompson, G. E., ed. *The applications of remote sensing and benefits to Canada. Proceedings [of the] second Canadian symposium on remote sensing, University of Guelph, Guelph, Ontario, Canada, April 29-May 1, 1974. Vol. 2. Ottawa, Canadian Remote Sensing Society, 1974, p. 437-47.*) [Various techniques compared; air photography, especially colour infra-red, was particularly accurate.]
- THOMPSON, M. Lime stabilization of frost-susceptible soils. *Frost i Jord*, Nr. 10, 1973, p. 45-52. [Study of freeze-thaw durability of lime-treated soils with reference to highway construction.]
- THUE, J. V. Om utforming av grunne fundament. *Frost i Jord*, Nr. 13, 1974, p. 5-21. [Describes research on thermal design of shallow foundations to be used in conditions such as exist in Norway. English summary, p. 20-21.]
- TOLSTIKHIN, O. N. *Naledi i podzemnyye vody severo-vostoka SSSR [Naleds and underground waters of north-eastern U.S.S.R.]*. Novosibirsk, Izdatel'stvo "Nauka", 1974. 164 p. [Comprehensive study, including formation and distribution of naleds, and the hydrological and permafrost conditions in this area.]
- TOMIRDIARO, S. V., and others. Fiziko-geograficheskaya obstanovka i osobennosti formirovaniya lessovo-ledovogo pokrova na ravinakh severo-vostoka Azii [Physico-geographic environment and features of formation of the loess-glacial covering of the plains of north-eastern Asia]. [By] S. V. Tomidiaro, V. K. Ryabchun [and] B. S. Ivanets. *Geologiya i Geofizika*, 1974, No. 7, p. 47-61. [Ice veins and polygons observed. English summary, p. 61.]
- TRUSH, N. I., and NISTRATOVA, T. A. Sostav i svoystva alasnykh otlozheniy Yano-Indigirskogo mezhdurech'ya [Composition and properties of alas deposits of the Yana-Indigirka interfluve]. *Merzlotnyye Issledovaniya*, Vyp. 14, 1974, p. 43-55. [Yakutskaya A.S.S.R.]
- UGOLINI, F. C. Ice-rafted sediments as a cause of some thermokarst lakes in the Noatak River delta, Alaska. *Science*, Vol. 188, No. 4183, 1975, p. 51-53. [Evidence suggests sediments, which exist as sheets of mud, change albedo and thermal regime of soil, inducing development of thermokarst and leading to formation of ponds and lakes.]
- VASIL'YEV, Y. M. Factors affecting the heaving of subgrade soils at freezing. *Frost i Jord*, Nr. 12, 1973, p. 17-18. [Lists factors and classifies soils according to susceptibility to heaving.]
- VOLKOVA, V. P. Nekotoryye osobennosti solevogo stoka v oblastiakh sploshnogo rasprostraneniya mnogoletne-merzlykh porod [Some peculiarities of salt run-off in regions of continuous permafrost]. *Merzlotnyye Issledovaniya*, Vyp. 14, 1974, p. 116-25. [Surface and underground waters in Yakutskaya A.S.S.R.]
- WATSON, E., and WATSON, S. Remains of pingos in the Cletwr basin, southwest Wales. *Geografiska Annaler*, Vol. 56A, Nos. 3-4, 1974, p. 213-25. [Relationship to topography and superficial deposits similar to those of open-system pingos of central Alaska and southern Yukon; on this basis, attempt is made to reconstruct permafrost and hydrological conditions in which Cletwr pingos developed.]
- YERSHOV, YE. D., and others. K raschetnoy skheme prognoza razvitiya protessa moroznogo issusheniya dispersnykh gornykh porod [Calculation for forecasting developments of frost drying processes of dispersed rocks]. [By] Ye. D. Yershov, V. V. Gurov, I. A. Komarov, Yu. P. Akimov, Ye. Z. Kuchukov. *Merzlotnyye Issledovaniya*, Vyp. 14, 1974, p. 222-29.
- ZAMOLOTCHIKOVA, S. A. Pucheniye i osadka porod sloya sezonnogo ottaivaniya na Leno-Vilyuyskom vodorazdele

- [Heaving and settlement of the seasonally frozen layer of rocks in the Lena-Vilyuy divide]. *Merzlotnyye Issledovaniya*, Vyp. 14, 1974, p. 148–53. [Thermokarst topography, particularly frost mounds and *alases*, in Yakutskaya A.S.S.R.]
- ZAMOLOTCHIKOVA, S. A., and SMIRNOVA, V. N. Temperatury i sezonnoye ottaivaniye porod na Leno-Vilyuyskom vodorazdele [Temperature and seasonal thawing of rocks in the Lena-Vilyuy divide]. *Merzlotnyye Issledovaniya*, Vyp. 14, 1974, p. 141–47. [Yakutskaya A.S.S.R.]
- ZESTKOVA, T. N. Vlazhnost' mineral'nykh prosloyek i agregatov merzlykh gruntov [Water content in frozen soil mineral bands and aggregates]. *Merzlotnyye Issledovaniya*, Vyp. 14, 1974, p. 196–203.
- ZOLTAI, S. C., and PETTAPECE, W. W. Tree distribution on perennially frozen earth hummocks. *Arctic and Alpine Research*, Vol. 6, No. 4, 1974, p. 403–11. [Trees grow mainly on sides of hummocks or in troughs between, leaning away from the hummocks as result of severe and repeated ground heaving.]
- ZOLTAI, S. C., and TARNOCAI, C. Perennially frozen peatlands in the western Arctic and subarctic of Canada. *Canadian Journal of Earth Sciences*, Vol. 12, No. 1, 1975, p. 28–43. [Describes main types and relates occurrence to climatic zonation.]

METEOROLOGICAL AND CLIMATOLOGICAL GLACIOLOGY

- BATTAN, L. J. Doppler radar observations of a hailstorm. *Journal of Applied Meteorology*, Vol. 14, No. 1, 1975, p. 98–108. [Results interpreted in terms of hailstone growth in updraughts.]
- DANSGAARD, W., and others. Climatic changes, Norsemen and modern man, [by] W. Dansgaard, S. J. Johnsen, N. Reeh, N. Gundestrup, H. B. Clausen and C. U. Hammer. *Nature*, Vol. 255, No. 5503, 1975, p. 24–28. [Use of isotope data from a core on crest of Greenland ice sheet to deduce climatic record and deduce evidence on present fluctuations.]
- HELD, I. M., and SUAREZ, M. J. Simple albedo feedback models of the icecaps. *Tellus*, Vol. 26, No. 6, 1974, p. 613–29. [Analysis of simple models of albedo feedback mechanism and its effect on global climate.]
- HENMI, T. Secondary ice particle production from rimed ice. *Dissertation Abstracts International*, B, Vol. 35, No. 6, 1974, p. 2830-B. [Study of riming shows number of secondary particles too small to account for ice particle concentrations in clouds, but evaporation of rimed particles could. Abstract of Ph.D. thesis, Colorado State University, 1974. University Microfilms order no. 74-27949.]
- HOBBS, P. V., and others. The dimensions and aggregation of ice crystals in natural clouds, [by] P. V. Hobbs, S. Chang and J. D. Locatelli. *Journal of Geophysical Research*, Vol. 79, No. 15, 1974, p. 2199–206. [Study on particles collected in clouds and ground stations in Cascade Mountains.]
- JOUZEL, J., and others. Étude isotopique de l'orage à grêle du 19 août 1971 dans la région de Clermont-Ferrand, par J. Jouzel, L. Merlivat avec la collaboration de P. Admirat. *Journal de Recherches Atmosphériques*, Tom. 7, No. 3, 1973, p. 167–74. [Analysis of deuterium and tritium in hailstones.]
- LOCATELLI, J. D., and HOBBS, P. V. Fall speeds and masses of solid precipitation particles. *Journal of Geophysical Research*, Vol. 79, No. 15, 1974, p. 2185–97. [Measurements for various sorts of natural particles with particular attention to effects of riming and aggregation.]
- LOEWE, F. Über Änderungen des Luftdrucks während der Eiszeit. *Zeitschrift für Gletscherkunde und Glazialgeologie*, Bd. 9, Ht. 1–2, 1973, p. 229–30. [During changes in amount of ice on land, air pressure at original sea-level changes. Uptake of air by growth of glacier ice and by cooling ocean diminishes mass of atmosphere and average global air pressure. Presents examples.]
- MACKLIN, W. C., and RYE, P. J. Crystallographic orientation distributions in accreted ice. *Journal of the Atmospheric Sciences*, Vol. 31, No. 3, 1974, p. 849–52. [Distribution of *c*-axes measured for wide range of air and deposition temperatures. Results can be used to infer growth environment of hail.]
- MOSSOP, S. C., and HALLETT, J. Ice crystal concentration in cumulus clouds: influence of the drop spectrum. *Science*, Vol. 186, No. 4164, 1974, p. 632–34. [Cloud chamber experiments on secondary ice crystals thrown off when supercooled droplets freeze on a moving target.]
- PONTIKIS, C., and others. Germination des cristaux de glace dans l'air atmosphérique, par C. Pontikis, A. Rigaud et C. Rebotier. *Annales de Chimie*, Tom. 9, Nos. 4–6, 1974, p. 393–99. [Nucleation discussed in terms of observations of ice crystal growth in the atmosphere. Includes data on effect of electric field. English abstract, p. 393. Discussion, p. 399.]
- PRODI, F. Chlorides in natural and artificial hailstones. *Journal of Applied Meteorology*, Vol. 14, No. 1, 1975, p. 120–24. [Technique described. Results show chlorides are distributed through lattice, but segregate to grain boundaries during storage near 0° C.]
- SCHNELL, R. C. Biogenic sources of atmospheric ice nuclei. *Dissertation Abstracts International*, B, Vol. 35, No. 6, 1974, p. 2947-B. [Freezing nuclei formed from leaf litter, phytoplankton in sea-water and other biogenic sources can account for large proportion of observed nuclei. Abstract of Ph.D. thesis, University of Wyoming, 1974. University Microfilms order no. 74-23704.]
- WILLIAMS, J. H., and others. Simulation of the atmospheric circulation using the NCAR global circulation model with ice age boundary conditions, [by] J. [H.] Williams, and R. G. Barry, W. M. Washington. *Journal of Applied Meteorology*, Vol. 13, No. 3, 1974, p. 305–17. [Boundary conditions used represent those of present and of Würm/Wisconsin glacial maximum about 20 000 years ago for January and July.]

SNOW

- ADAMS, E. S. Uptake by brook trout of lead and hydrocarbons from snowmobile exhaust: I. Field study. II. Lead and hydrocarbon content of snow after snowmobiling. III. Laboratory study. IV. Stamina tests. *Dissertation Abstracts International*, B, Vol. 35, No. 4, 1974, p. 1980-B. [No abstract for part II received. Abstract of Ph.D. thesis, University of New Hampshire, 1974. University Microfilms order no. 74-21088.]

- AKITAYA, E. Chōsa kōdo ni yoru nadare jōhō no seiri [Statistics of avalanche accidents in Japan (1918-74) by the use of hand-sorting edge-punched cards]. *Seppyō*, Vol. 36, No. 3, 1974, p. 96-103. [Presents some facts and figures. English summary, p. 102-03.]
- ALFORD, D. SNOW. (In Ives, J. D., and Barry, R. G., ed. *Arctic and alpine environments*. London, Methuen, [c1974], p. 85-110.) [Deals with snow as a climatic factor.]
- ALLEN, L. E. A sub-alpine snowmelt runoff model. *Dissertation Abstracts International*, B, Vol. 35, No. 5, 1974, p. 2173-B. [Describes development of digital computer model for simulating daily watershed run-off. Abstract of Ph.D. thesis, University of Wyoming, 1974. University Microfilms order no. 74-23680.]
- BENSON, C. S., and others. Physical characteristics of seasonal snow cover in northern Alaska, by C. S. Benson, B. Holmgren, D. Trabant and G. Weller. *Proceedings of the Western Snow Conference*, 42nd annual meeting, 1974, p. 58-63. [Describes nature and behaviour of snow cover in this area.]
- DRAEGER, W. C., and LAUER, D. T. Areal extent of snow in forested regions: a practical estimation technique using ERTS-1 data. *Proceedings of the ninth International Symposium on Remote Sensing of Environment . . . 1974 . . .* Ann Arbor, Center for Remote Sensing Information and Analysis, Willow Run Laboratories, Environmental Research Institute of Michigan, Vol. 1, [1974], p. 333-39. [Use in stream-flow forecasting verified.]
- EVANS, W. E. Progress in measuring snow cover from ERTS imagery. *Proceedings of the Western Snow Conference*, 42nd annual meeting, 1974, p. 37-45. [Discusses some problems including errors arising from snow-covered areas which escape detection for several reasons.]
- FOWLER, W. B. Thermal conductivity—basis of a potential method for determining in situ snow density. *Proceedings of the Western Snow Conference*, 42nd annual meeting, 1974, p. 46-52. [Describes technique and discusses accuracy.]
- GARY, H. L. Snow accumulation and melt along borders of a strip cut in New Mexico. *U.S. Dept of Agriculture. Forest Service. Research Note RM-279*, 1974, 8 p. [Presents results of two-year survey along sunny and shady borders of east-west 60 ft (18 m) wide clearing on south slope of spruce forest.]
- GOOD, W. Ortung Lawinenschüttester: optimaler Einsatz von Sender-Empfänger-Systemen. *Les Alpes. Bulletin Mensuel du Club Alpin Suisse*, 1975, No. 1, p. 13-14. [Outlines principles of efficient search for people overwhelmed by avalanches.]
- GOOD, W. Zum heutigen Stand der Ortung Lawinenschüttester. *Les Alpes. Bulletin Mensuel du Club Alpin Suisse*, 1974, No. 12, p. 322-24. [Discusses choice of detectors for finding victims of avalanches, mentioning features of different makes.]
- GOOD, W. R. Some effects of spring snowmelt runoff on aquatic invertebrate populations in a high mountain stream. *Dissertation Abstracts International*, B, Vol. 35, No. 5, 1974, p. 2145-B. [Run-off at 3 000 m in Wyoming began in mid-May and reached peak in late June. Abstract of Ph.D. thesis, University of Wyoming, 1974. University Microfilms order no. 74-23692.]
- GOODRICH, L. E. A one-dimensional numerical model for geothermal problems. *Canada. National Research Council. Division of Building Research. Technical Paper No. 421*, 1974, [36] p. [Model is programmed to allow flexibility in choice of thermal parameters and initial and boundary conditions, and provision is made for build-up and decay of seasonal snow cover on ground surface.]
- HOHAM, R. W. Optimum temperatures and temperature ranges for growth of snow algae. *Arctic and Alpine Research*, Vol. 7, No. 1, 1975, p. 13-24. [Describes laboratory studies. Species that do not grow above 10° C and have optimum growth at lower temperatures are classified as true snow algae.]
- HOUCADE, B. Le ramassage de la neige en haute vallée du Djadj-e-Roud (Elbourz central, Iran). *Revue de Géographie Alpine*, Tom. 63, Fasc. 1, 1975, p. 147-49. [Commerce in snow in Iran, where it was once collected from the mountains and transported to Tehran, is now dying out.]
- IVES, J. D., and others. *Development of methodology for evaluation and prediction of avalanche hazard in the San Juan mountain area of southwestern Colorado*, [by] J. D. Ives, J. C. Harrison, R. L. Armstrong. Boulder, Colorado, University of Colorado. Institute of Arctic and Alpine Research, 1973. [viii], 122 p. (INSTAAR-14-06-7155-2.) [Study of relationship between terrain, climate and snow stratigraphy.]
- JERNELÖV, A., and WALLIN, T. Air-borne mercury fall-out on snow around five Swedish chlor-alkali plants. *Atmospheric Environment*, Vol. 7, No. 2, 1973, p. 209-14. [Only small fraction of total amount is deposited locally.]
- KOL, E., and EUROLA, S. Red snow algae from Spitsbergen. *Astarte*, Vol. 7, No. 2, 1974, p. 61-66. [Twelve Arctic-alpine species, three of them new to Spitsbergen, recorded in ten localities.]
- KOLOMYTS, E. G. Kristallomorfologiya i metamorfizm snezhnoy tolshchi (k teorii strukturnogo snegovedeniya) [Crystallomorphology and metamorphism of snow cover (theory of snow structure)]. *Sibirskiy Geograficheskiy Sbornik*, [No.] 8, 1974, p. 69-144. [Describes theoretical and field studies. English abstract, p. 278.]
- KOROLEV, A. I. Nablyudeniya za dvizheniyem laviny [Avalanche movement observations]. *Meteorologiya i Gidrologiya*, 1974, No. 5, p. 107-08. [Discusses variations in snow friction in different parts of avalanche.]
- LANG, H., and DAVIDSON, G. Beitrag zum Problem der klimatischen Schneegrenze. *Verhandlungen der Schweizerischen Naturforschenden Gesellschaft*, 1973, p. 158-60. [Contribution to the problem of the climatic snow line, with reference to results obtained at Weissfluhjoch.]
- LARSON, F. R., and others. Using aerial measurements of forest overstorey and topography to estimate peak snow-pack, [by] F. R. Larson, P. F. Ffolliott and K. E. Moessner. *U.S. Dept. of Agriculture. Forest Service. Research Note RM-267*, 1974, 4 p. [Where slope steepness and aspect vary, and several forest overstorey size and density classes are mixed, only topographic attributes need be measured.]
- LEMMELÄ, R., and KUUSISTO, E. Evaporation from snow cover. *Hydrological Sciences Bulletin*, Vol. 19, No. 4, 1974, p. 541-48. [Discusses dependence on climatic factors. Mean evaporation in daytime (0700-1900 h) was 0.26 mm and during night 0.03 mm during 107 days between February and April in southern Finland.]
- LORCH, W. Méthodes modernes pour éviter le mort sous l'avalanche. *Les Alpes. Bulletin Mensuel du Club Alpin Suisse*, 1974, No. 12, p. 325-29. [Discusses choice of detectors for finding avalanche victims, listing features of various makes.]

- LOWNDES, C. A. S., and others. An assessment of the usefulness of some snow predictors, by C. A. S. Lowndes, A. Beynon and C. L. Hawson. *Meteorological Magazine*, Vol. 103, No. 1229, 1974, p. 341–58. [Probability of snow obtained for different values of four predictors, based on observations made at stations in Wales and West Midlands of England.]
- MACKAY, J. R., and MACKAY, D. K. Snow cover and ground temperature, Garry Island, N.W.T. *Arctic*, Vol. 27, No. 4, 1974, p. 287–96. [Discusses insulating effect of snow for 1968–73 period.]
- MARTINELLI, M., jr. Snow avalanche sites; their identification and evaluation. *U.S. Dept. of Agriculture. Forest Service. Agriculture Information Bulletin* 360, 1974, 27 p. [Describes, with many illustrations, avalanche-prone areas and how to estimate frequency and intensity. Presents check-list for field observers to help evaluate evidence.]
- NORD, M., and TAESLER, R. Snötäckets densitet och massa i Sverige. *Statens Institut för Byggnadsforskning. Rapport, R21 : 1973, [1973.]* [iv], 124 p. [Density and weight of snow cover in Sweden, using data from 1909–25 and 1931–60. English abstract, p. iii–iv.]
- ONODERA, H. Hokkaidō shiretoko-hantō ni okeru nadare-taiseikichi no tokuchō [The dirt cone deposition of an avalanche on Shiretoko peninsula, Hokkaido]. *Seppyō*, Vol. 36, No. 2, 1974, p. 69–72. [Describes cone, which was observed on 26 July 1970 and was composed of snow under a 10–15 cm layer of rocks and clods. English summary, p. 72.]
- PARRY, J. T. X-band radar in terrain analysis under summer and winter conditions. (In Thompson, G. E., ed. *The applications of remote sensing and benefits to Canada. Proceedings [of the] second Canadian symposium on remote sensing, University of Guelph, Guelph, Ontario, Canada, April 29–May 1, 1974. Vol. 2. Ottawa, Canadian Remote Sensing Society, 1974, p. 471–85.*) [Describes advantages of SLAR systems. Tested over snow cover up to 40 cm depth.]
- PARRY, J. T., and GREY, B. J. The use of composite minimum brightness charts in the mapping and interpretation of snow in Quebec-Labrador. (In Thompson, G. E., ed. *The application of remote sensing and benefits to Canada. Proceedings [of the] second Canadian symposium on remote sensing, University of Guelph, Guelph, Ontario, Canada, April 29–May 1, 1974. Vol. 1. Ottawa, Canadian Remote Sensing Society, 1974, p. 165–84.*) [Presents results of investigation of areal extent and temporal variation of snow cover in this area from early March to late July.]
- PEAK, G. W. An ice melt formula. *Proceedings of the Western Snow Conference*, 42nd annual meeting, 1974, p. 64–72. [Discusses application to snow melt run-off.]
- PEARSON, T. Simulating runoff to the Hungry Horse reservoir of western Montana. *Proceedings of the Western Snow Conference*, 42nd annual meeting, 1974, p. 96–102. [Shows that major basin with large snow-melt component can be reconstituted on annual basis with good results, and basin model can be used for planning flood control, stream-flow forecasting, etc.]
- PEEL, D. A. Organochlorine residues in Antarctic snow. *Nature*, Vol. 254, No. 5498, 1975, p. 324–25. [Samples from previous 5–10 yr accumulation analysed for DDT; results suggest concentration of DDT in atmosphere may not be as high as thought.]
- QUERVAIN, M. R. DE. Die Berücksichtigung der Lawinhäufigkeit in der Lawinengefahrenkarte. Eine grundsätzliche Betrachtung. *Winterbericht des Eidgenössischen Institutes für Schnee- und Lawinenforschung*, Nr. 37, 1974, p. 157–62. [Proposals discussed for preparation of map showing likelihood of avalanches and most suitable scheme to adopt based on factors such as pressure, time and location.]
- QUERVAIN, M. R. DE. Eine internationale Lawinenklassifikation. *Zeitschrift für Gletscherkunde und Glazialgeologie*, Bd. 9, Ht. 1–2, 1973, p. 189–206. [Presents German version of proposals of the working group of the International Commission of Snow and Ice (see *Hydrological Sciences Bulletin*, Vol. 18, No. 4, 1973, p. 391–402) for avalanche classification.]
- RICKERD, J. P. Earthquakes, traffic vibrations, skiers—what triggers an avalanche? *Science Dimension*, Vol. 7, No. 1, 1975, p. 22–27. [Outlines work of the Division of Building Research, National Research Council of Canada, investigating characteristics of avalanches and avalanche defence methods. Text in English and French.]
- RICQ-DE BOUARD, M. Interpretation de mesures chimiques et physico-chimiques sur des eaux de fusion de neige et de glace. *Zeitschrift für Gletscherkunde und Glazialgeologie*, Bd. 9, Ht. 1–2, 1973, p. 169–80. [Presents results of analysing melt waters.]
- ROTEN, M. A propos de chutes de neige sale en Suisse centrale (mars 1973). *Revue de Géographie Alpine*, Tom. 62, Fasc. 3, 1974, p. 315–25. [Discusses grey colour of snowfall on 13 and 14 March 1973 due to dust.]
- SAEKI, M., and others. Mitsumata ōnadare hassei-sekichi no rinkyō chōsa [Investigation of condition of forest on site of origin of large avalanche in Mitsumata]. [By] M. Sacki, S. Watanabe, D. Umeyama [and] E. Kawai. *Seppyō*, Vol. 36, No. 2, 1974, p. 73–78. [Avalanche occurred in 1918 and there have been heavy snowfalls since then. Growth of trees is poor on upper half of slope. English summary, p. 78.]
- SAITO, S. Setsugai taisaku to shitenō heitanchi ni okeru nanameue [Slant planting for reducing snow damage on flat ground]. *Seppyō*, Vol. 36, No. 4, 1974, p. 137–40. [Suggests method of planting trees to reduce damage by snow. English summary, p. 140.]
- SHUL'TS, V. L., and SUSLOV, V. F., ed. Glyatsiologiya Sredney Azii (snezhnyy pokrov i ledniki) [Glaciology of Central Asia (snow cover and glaciers)]. *Sredneaziatskiy Regional'nyy Nauchno-Issledovatel'skiy Gidrometeorologicheskii Institut. Trudy*, Vyp. 9(90), 1973, 128 p. [Ten articles dealing with snow cover in mountainous areas, hydrometeorological glacier regimes and melt water flow.]
- SLAUGHTER, C. W., and others. Snow accumulation for Arctic freshwater supplies, [by] C. W. Slaughter, M. Mellor, P. V. Sellmann, J. Brown and R. Brown. *Arctic Bulletin*, Vol. 1, No. 5, [1975], p. 218–24. [Discusses use of fences for snow drift accumulation to increase amount of snow available for fresh water.]
- SLAYMAKER, H. O. Alpine hydrology. (In Ives, J. D., and Barry, R. G., ed. *Arctic and alpine environments*. London, Methuen, [c1974], p. 133–58.) [Includes effects of snow accumulation and snow melt, and contrasts Arctic and alpine hydrology.]

- SOFIYAN, A. P., and MAZUR, A. I. Veroyatnosti raschet vysoty snezhnogo pokrova s uchedom territorial'noy neravnomernosti zaleganiya [Probability calculation of snow cover depth taking into account areal non-uniformity of deposits]. *Meteorologiya i Gidrologiya*, 1974, No. 5, p. 80-85. [English summary, p. 84.]
- TABLER, R. D. New engineering criteria for snow fence systems. *Transportation Research Record* 506, 1974, p. 65-78. [Summarizes factors contributing to success of snow fences specially constructed along new section of road in Wyoming.]
- VINJE, T. E. On the small scale features of temperature and wind profiles near a snow surface. *Norsk Polarinstittutt. Arbok* 1973 [pub. 1975], p. 27-39. [Vertical extension of zig-zag form found to be markedly reduced with decreasing roughness of underlying surface.]
- WILLIAMS, G. P. Surface heat losses from heated pavements during snow melting tests. *Canada. National Research Council. Division of Building Research. Technical Paper* No. 427, 1975, [36] p. [Presents observations, analysis and results of tests carried out during three winter seasons on electrically heated concrete slab instrumented to measure heat in-puts and losses during and between snowfalls.]
- YOUNG, G. J. A stratified sampling design for snow surveys based on terrain shape. *Proceedings of the Western Snow Conference*, 42nd annual meeting, 1974, p. 15-22. [Spatial distribution of snow-pack at end of winter may be mapped by this method.]