

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 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.

GLACIOLOGICAL INSTRUMENTS AND METHODS

- GITLIN, S. N., and others. A calorimetric method for measuring water content of hailstones, by S. N. Gitlin, H. S. Fogler and G. G. Goyer. *Journal of Applied Meteorology*, Vol. 5, No. 5, 1966, p. 715-21.
- KNIGHT, C. A. Formation of crystallographic etch pits on ice, and its application to the study of hailstones. *Journal of Applied Meteorology*, Vol. 5, No. 5, 1966, p. 710-14. [New technique for etching ice described and applied to hailstones.]
- WELCH, R. A comparison of aerial films in the study of the Breidamerkur glacier area, Iceland. *Photogrammetric Record*, Vol. 5, No. 28, 1966, p. 289-306. [Colour, infra-red, false colour and panchromatic film tried in experiments in 1965. Two latter considered superior.]
- WILLIAMS, R. J., and MERYMAN, H. T. A calorimetric method for measuring ice in frozen solutions. *Cryobiology*, Vol. 1, No. 5, 1965, p. 317-23.

PHYSICS OF ICE

- ADAMSON, A. W., and others. Physical adsorption of vapors on ice. I. Nitrogen [by] A. W. Adamson, L. M. Dormant and M. Orem. *Journal of Colloid and Interface Science*, Vol. 25, No. 2, 1967, p. 206-17. [Ice powder at 77°K gives adsorption isotherms which suggests surface is not highly polar.]
- AKITT, J. W., and LILLEY, T. H. The nature of hydrogen bonding in ice and water: ¹H nuclear magnetic resonance data on ice. *Chemical Communications*, 1967, No. 7, p. 323-24. [Narrow line observed inconsistent with usual view of hydrogen bonding in ice.]
- ANANTHA, N. G., and CHALMERS, B. Electrical phenomena occurring during freezing of dilute aqueous solutions. *Journal of Applied Physics*, Vol. 38, No. 11, 1967, p. 4416-20. [Study of potential developed at surface during freezing of NH₄OH and NH₄Cl solutions. Explanation of effect.]
- ANDERSON, D. M. Ice nucleation and the substrate-ice interface. *Nature*, Vol. 216, No. 5115, 1967, p. 563-66. [Discussion of the theory of heterogeneous nucleation of ice.]
- ANDERSON, D. M. The interface between ice and silicate surfaces. *Journal of Colloid and Interface Science*, Vol. 25, No. 2, 1967, p. 174-91. [Evidence for liquid-like layer.]
- ANGELL, C. A., and others. Concentrated electrolyte solution transport theory: directly measured glass temperatures and vitreous ice, [by] C. A. Angell, E. J. Sare [and] R. D. Bressel. *Journal of Physical Chemistry*, Vol. 71, No. 8, 1967, p. 2759-61. [Letter. Measurements of glass transition in concentrated solutions of Ca(NO₃)₂ in H₂O gives curve which extrapolates to pure vitreous ice transition temperature.]
- BAILEY, I. H., and MACKLIN, W. C. The effect of impurities on the mechanical strength of accreted ice. *Journal of the Atmospheric Sciences*, Vol. 24, No. 6, 1967, p. 707-10. [Experiments with a number of organic impurities.]
- BOGER, D. V., and WESTWATER, J. W. Effect of buoyancy on the melting and freezing process. *Transactions of the American Society of Mechanical Engineering*, Vol. 89, No. 1, 1967, p. 81-89. [Measurements of freezing rates with and without convection.]
- BRIVATI, J. A., and others. Electron spin resonance studies of the hydroxyl radical in γ -irradiated ice, by J. A. Brivati, M. C. R. Symons, D. J. A. Tirling, H. W. Wardale and D. O. Williams. *Transactions of the Faraday Society*, Vol. 63, No. 9, 1967, p. 2112-16. [Study of electron spin resonance spectra of H₂O and D₂O irradiated at 77°K shows lack of axial symmetry of OH radical.]
- BROWNSCOMBE, J. L., and HALLETT, J. Experimental and field studies of precipitation particles formed by the freezing of supercooled water. *Quarterly Journal of the Royal Meteorological Society*, Vol. 93, No. 398, 1967, p. 455-73. [Physical basis for interpreting shape, bubble and crystal structure of accreted ice.]
- BRYANT, G. W. Thermoelectric power of single crystals of ice containing HF or NH₃. *Philosophical Magazine*, Eighth Ser., Vol. 16, No. 141, 1967, p. 495-504. [Measurements in agreement with Jaccard's theory.]
- CLIFFORD, J. Proton magnetic resonance data on ice. *Chemical Communications*, 1967, No. 17, p. 880-81. [Width of resonance line implies a proton spin-spin relaxation time of 5-10 μ s. A narrow line is also observed and its origin is discussed in terms of liquid water or non-hydrogen-bonded water molecules.]
- CROSS, J. D. The electret effect in ice. *Journal of the Electrochemical Society*, Vol. 115, No. 1, 1968, p. 42-45. [Measurement of behaviour of ice single crystals and polycrystalline ice at -70°C.]
- DIBDIN, G. H. E.S.R. of γ -irradiated single crystals of ice at 77°K. Identification of the hydroxyl radical and its trapping site. *Transactions of the Faraday Society*, Vol. 63, No. 9, 1967, p. 2098-111. [Trapping sites identified as 24 sites differing only in orientation. Annealing of radicals studied.]
- DROST-HANSEN, W. The water-ice interface as seen from the liquid side. *Journal of Colloid and Interface Science*, Vol. 25, No. 2, 1967, p. 131-60. [Review of properties of ice and of what happens on molecular scale in freezing process.]

- DURAND, M., and others. Bulk conductivity of ice between -25 and -100°C with ion exchange membranes, [by M. Durand, M. Deleplanque and A. Kahane. *Solid State Communications*, Vol. 5, No. 9, 1967, p. 759–60. [Activation energy found to be about 9 kcal/mol to -70°C and about 13 kcal/mol below.]
- EVANS, L. F. Ice nucleation under pressure and in salt solution. *Transactions of the Faraday Society*, Vol. 63, No. 12, 1967, p. 3060–71. [Organic compounds which nucleate ice do so better under pressure or with dissolved salt.]
- EVANS, L. F. Selective nucleation of the high-pressure ices. *Journal of Applied Physics*, Vol. 38, No. 12, 1967, p. 4930–32. [Use of selective nucleators to produce any required polymorph of ice from liquid at high pressure except ice II or VII.]
- FAURE, P., and KAHANE, A. Interprétation des spectres optiques de basse fréquence de la glace à l'aide d'un modèle dynamique du réseau cristallin. *Journal de Physique*, Tom. 28, No. 11–12, 1967, p. 944–50. [Interpretation of low-frequency infra-red and Raman spectra of ice in terms of dynamical model of the lattice. English abstract.]
- FRANK, F. C. Regelation: a supplementary note. *Philosophical Magazine*, Eighth Ser., Vol. 16, No. 144, 1967, p. 1267–74. [Discussion of stability of ice–water interface in front of and behind a wire or other body moving through ice.]
- GLEN, J. W. The effect of hydrogen disorder on dislocation movement and plastic deformation of ice. *Physik der kondensierten Materie*, Bd. 7, Ht. 1, 1968, p. 43–51. [Because of H disorder, dislocations can only move through ice if electrical point defects move and reverse H-bonds. French and German abstracts.]
- GROSS, G. W. Ion distribution and phase boundary potentials during the freezing of very dilute ionic solutions at uniform rates. *Journal of Colloid and Interface Science*, Vol. 25, No. 2, 1967, p. 270–79. [Experiments and theoretical interpretation.]
- HOBBS, P. V., and SCOTT, W. D. Surface diffusion at the ice–air interface. *Journal of Colloid and Interface Science*, Vol. 25, No. 2, 1967, p. 228–30. [Theory of surface diffusion which explains apparent anomaly between theory and experiment.]
- HOEKSTRA, P., and MILLER, R. D. On the mobility of water molecules in the transition layer between ice and a solid surface. *Journal of Colloid and Interface Science*, Vol. 25, No. 2, 1967, p. 166–73. [Experiments on migration of water along transition layer under electrical and temperature gradients.]
- ITAGAKI, K. Some surface phenomena of ice. *Journal of Colloid and Interface Science*, Vol. 25, No. 2, 1967, p. 218–27. [Neck formation between ice sphere and plane close to it. Particle migration on a subliming ice surface.]
- JELLINEK, H. H. G. Liquid-like (transition) layer on ice. *Journal of Colloid and Interface Science*, Vol. 25, No. 2, 1967, p. 192–205. [Survey of ideas on and evidence for liquid-like layer.]
- JELLINEK, H. H. G., and IBRAHIM, S. H. Sintering of powdered ice. *Journal of Colloid and Interface Science*, Vol. 25, No. 2, 1967, p. 245–54. [Rate of decrease of surface area of $0.5\ \mu\text{m}$ ice spheres measured. Main cause is thought to be plastic flow under surface forces.]
- KETCHAM, W. M., and HOBBS, P. V. The preferred orientation in the growth of ice from the melt. *Journal of Crystal Growth*, Vol. 1, No. 5, 1967, p. 263–70. [Experimental study of criteria by which one grain wedges out another.]
- KNIGHT, C. A. The contact angle of water on ice. *Journal of Colloid and Interface Science*, Vol. 25, No. 2, 1967, p. 280–84. [Observation of angle of surfaces of thin layer of water freezing on a copper plate used to deduce information about surface energies.]
- KNIGHT, C. A. Spiral air bubbles in ice. *Nature*, Vol. 214, No. 95, 1967, p. 1324–25. [Discussion of origin of spiral bubbles formed in freezing 0.1% NaCl solution.]
- KOPP, M. Processes on the surface of ice. *Surface Science*, Vol. 7, No. 3, 1967, p. 302–08. [Survey of surface phenomena and calculation of activation energies for release and mobility on freshly crystallized and on annealed ice basal planes.]
- KRAUSZ, A. S., and GOLD, L. W. Surface features observed during thermal etching of ice. *Journal of Colloid and Interface Science*, Vol. 25, No. 2, 1967, p. 255–62. [Description of etching of grain boundaries and linear and hillock-like features.]
- KUHNS, I. E., and MASON, B. J. The supercooling and freezing of small water droplets falling in air and other gases. *Proceedings of the Royal Society, Ser. A*, Vol. 302, No. 1471, 1968, p. 437–52. [Study of temperature of freezing, interpretation on homogeneous nucleation theory.]
- LANDY, M., and FREIBURGER, A. Studies of ice adhesion. I. Adhesion of ice to plastics. *Journal of Colloid and Interface Science*, Vol. 25, No. 2, 1967, p. 231–44. [Measurement for 29 rigid plastics. Correlation with type of chemical bond and flexural modulus.]
- LATHAM, J., and STOW, C. D. Charge transfer associated with the evaporation of ice in electric fields. *Journal of the Meteorological Society of Japan*, Vol. 44, No. 5, 1966, p. 286–90. [Experiments described.]
- LAVROV, V. V. Koeffitsiyent Puassona l'da pri staticheskoy nagruzke [Poisson coefficient of ice under a static load]. *Problemy Arktiki i Antarktiki [Problems of the Arctic and Antarctic]*, Vyp. 26, 1967, p. 49–52.
- LEFEBRE, V. The freezing potential effect. *Journal of Colloid and Interface Science*, Vol. 25, No. 2, 1967, p. 263–69. [The potential developed on freezing dilute ionic solutions is explained in terms of a model of the ice–solution interface.]
- LIEB, E. H. Residual entropy of square ice. *Physical Review*, Ser. 2, Vol. 162, No. 1, 1967, p. 162–72. [Exact calculation of residual entropy of two-dimensional analogue of ice.]
- NOZIK, A. J., and KAPLAN, M. Mössbauer resonance studies of ferrous ions in ice. *Journal of Chemical Physics*, Vol. 47, No. 8, 1967, p. 2960–71. [Study of ice frozen from FeCl_2 and FeSO_4 solutions. Quenching liquid to -196°C produces cubic ice. Role of ferrous ions and their position in ice lattice discussed.]
- NUNN, K. R., and ROWELL, D. M. Regelation experiments with wires. *Philosophical Magazine*, Eighth Ser., Vol. 16, No. 144, 1967, p. 1281–83. [Observations of velocity of movement of wires of various dimensions and thermal conductivities pulled through ice.]

- NYE, J. F. Theory of regelation. *Philosophical Magazine*, Eighth Ser., Vol. 16, No. 144, 1967, p. 1249-66. [Detailed study of theory of motion of a wire or other object through ice. Discussion of discrepancies between theory and experiment.]
- ODENCRANTZ, F. K., and BUECHER, R. W. Temperature-dependence of the polarity of electrical charges on ice crystals. *Science*, Vol. 158, No. 3798, 1967, p. 256-57. [Sign of charge on ice crystals formed from supercooled cloud appears to be related to crystal habit.]
- PRUPPACHER, H. R. Interpretation of experimentally determined growth rates of ice crystals in supercooled water. *Journal of Chemical Physics*, Vol. 47, No. 5, 1967, p. 1807-13. [Measurements of growth rate in basal plane discussed on basis of theories that it is heat-flow controlled or molecular kinetic. Both phenomena are important.]
- PRUPPACHER, H. R. Some relations between the structure of the ice-solution interface and the free growth rate of ice crystals in supercooled aqueous solutions. *Journal of Colloid and Interface Science*, Vol. 25, No. 2, 1967, p. 285-94. [Measurements of growth rate of ice in supercooled water and solutions.]
- SCHILLER, R. Radiation chemistry of ice. I. Nature and pH dependence of the reducing species. *Journal of Chemical Physics*, Vol. 47, No. 7, 1967, p. 2281-83. [No free electrons detected in ice whereas they are found in water. pH dependence of H atom yield.]
- STECHEK, T. P., and WILLIAMS, D. A. An observational distinction between interstellar grain models. *Publications of the Astronomical Society of the Pacific*, Vol. 78, No. 465, 1966, p. 549-50. [How to distinguish between ice and graphite models by observation.]
- TOWNSEND, D. W., and VICKERY, R. P. An experiment in regelation. *Philosophical Magazine*, Eighth Ser., Vol. 18, No. 144, 1967, p. 1275-80. [Measurements of the movement of objects of different geometries and thermal properties pulled through ice.]
- VERTSNER, V. N., and ZHDANOV, G. S. Elektronno-mikroskopicheskiye issledovaniye nizkotemperaturnykh modifikatsiy l'da [Electron-microscope study of the low-temperature forms of ice]. *Kristallografiya [Crystallography]*, Tom 10, No. 5, 1965, p. 715-22. [Observations of hexagonal, cubic and amorphous ice. English translation: *Soviet Physics-Crystallography*, Vol. 10, No. 5, 1966, p. 597-602.]
- WEBB, W. W., and HAYES, C. E. Dislocations and plastic deformation of ice. *Philosophical Magazine*, Eighth Ser., Vol. 16, No. 143, 1967, p. 909-25. [Direct observations of dislocations using X-ray topographic technique.]
- WHALLEY, E., and BERTIE, J. E. The far infrared spectrum and long-range forces in ice. *Journal of Colloid and Interface Science*, Vol. 25, No. 2, 1967, p. 161-65. [Evidence from infra-red spectra for long-range forces which may account for surface effects in ice.]
- ZIMBRICK, J., and KEVAN, L. Paramagnetic relaxation of trapped electrons in irradiated alkaline ices. *Journal of Chemical Physics*, Vol. 47, No. 7, 1967, p. 2364-71. [Study of relaxation times and line widths and interpretation.]

LAND ICE. GLACIERS. ICE SHELVES

- BROCAS, J., and PICCIOTTO, E. Nickel content of Antarctic snow: implications of the influx rate of extra-terrestrial dust. *Journal of Geophysical Research*, Vol. 72, No. 8, 1967, p. 2229-36. [Analysis of samples of firn. Concludes that total extra-terrestrial mass accreted by earth is 3-10 million tons per year.]
- BRUNGER, A. G., and others. Recession of the Hector and Peyto Glaciers: further studies in the Drummond Glacier, Red Deer valley area, Alberta, by A. G. Brunger, J. G. Nelson and I. Y. Ashwell. *Canadian Geographer*, Vol. 11, No. 1, 1967, p. 35-48. [Estimates based on photographs, tree-ring data, and ablation data.]
- EVERS, W. Welches ist der höchste Berg Norwegens? *Petermanns Geographische Mitteilungen*, Jahrg. 111, 4. Quartalshft., 1967, p. 278. [Whether Glittertind or Galdhøpiggen is highest mountain of Norway depends on depth of snow and firn on Glittertind. In recent years this decreased so as to raise doubts, but it has now increased again.]
- FERRERO, G. M. Moto ondoso in un canale glaciale. *Bollettino del Comitato Glaciologico Italiano*, 2 Ser., No. 12, Pt. 1, 1962, [pub.] 1966, p. 11-22. [Study of formation and propagation of waves in glacial channel containing viscous fluid, due to disturbance in part of channel. English summary.]
- HARRISON, A. E. Alaskan glacier surges. *Alaska Sportsman*, Vol. 33, No. 8, 1967, p. 14-16, 50. [Describes glacier surges with particular reference to Muldrow Glacier.]
- HOCHSTEIN, M. P. Pressure ridges of the McMurdo Ice Shelf near Scott Base, Antarctica. *New Zealand Journal of Geology and Geophysics*, Vol. 10, No. 4, 1967, p. 1165-68. [Letter. Drilling and scientific equipment were tested in the pressure ridge area of the ice shelf near Scott Base. Some results of glaciological interest are presented.]
- IVES, J. D. Glacier terminal features in northeast Baffin Island: illustrations with descriptive notes. *Geographical Bulletin*, Vol. 9, No. 1, 1967, p. 62-70. [These include a normal valley glacier, the termini of a transection glacier system, an outlet glacier supplied by a plateau ice cap, and a cirque glacier.]
- IVES, J. D. Glaciers. *Canadian Geographical Journal*, Vol. 74, No. 4, 1967, p. 110-17. [Pictorial introduction to glaciology.]
- LORIUS, C., and VALLON, M. Étude structurographique d'un glacier antarctique. *Comptes Rendus Hebdomadaires des Séances de l'Académie des Sciences (Paris)*, Sér. D, Tom. 265, No. 4, 1967, p. 315-18. [Interpretation of core from ice in coastal region of Terre Adélie interpreted in terms of origin of ice.]
- MCCORKELL, R., and others. Aluminium-26 and beryllium-10 in Greenland ice, by R. McCorkell, E. L. Fireman and C. C. Langway. *Science*, Vol. 158, No. 3809, 1967, p. 1690-92. [Measurement of these radioisotopes in 200-year old Greenland ice.]
- PERETTI, L., and CHARRIER, G. Senalazione ed analisi pollinica di torba alla fronte attuale del Ghiacciaio del Rutor (Valle d'Aosta). Considerazioni di paleogeografia e paleoclimatologia locale. *Bollettino del Comitato Glaciologico Italiano*, 2 Ser., No. 14, Pt. 1, 1964, [pub.] 1967, p. 13-31. [Pollen analytical evidence that in the past the glacier has retreated still further than the present-day position.]

- TYULINA, T. YU. Puti resheniya problemy dvizheniya lednikov [Ways of solving the problems of glacier movement]. *Izvestiya Akademii Nauk SSSR. Seriya Geograficheskaya* [News of the Academy of Sciences of the U.S.S.R. Geographical Series], 1967, No. 4, p. 118-21. [Review of methods of solving problems of glacier flow, particularly by model experiments.]
- VIVIAN, R. Fiches des glaciers français. Le Glacier Blanc. *Revue de Géographie Alpine*, Tom. 55, Fasc. 4, 1967, p. 729-32. [Summary of knowledge of this glacier.]
- VIVIAN, R. Fiches des glaciers français. Le Glacier Noir. *Revue de Géographie Alpine*, Tom. 55, Fasc. 4, 1967, p. 733-36. [Summary of knowledge of this glacier.]
- WOOD, W. A. Glaciology: chaos in nature. *Explorers Journal*, Vol. 45, No. 2, 1967, p. 79-87. [Investigations of Steele Glacier, Yukon Territory, Canada, during its catastrophic advance.]

ICEBERGS. SEA, RIVER AND LAKE ICE

- BROWN, J. R., and MILNE, A. R. Reverberation under Arctic sea-ice. *Journal of the Acoustical Society of America*, Vol. 42, No. 1, 1967, p. 78-82. [Measurements of backscattering strength and correlation with surface roughness.]
- CARSTENS, T. Experiments with supercooling and ice formation in flowing waters. *Geofysiske Publikasjoner*, Vol. 26, No. 9, 1966, 18 p. [Confirms that supercooling is function of rate of heat loss and of quality of flow.]
- IZUKA, H., and others. Microorganisms in plankton-ice of the Antarctic Ocean. [by] H. Iizuka, I. Tanabe and H. Meguro. *Journal of General and Applied Microbiology*, Vol. 12, No. 1, 1966, p. 101-02.
- KAGAN, B. A. O prilivnom dreyfe l'da [On the tidal drift of ice]. *Izvestiya Akademii Nauk SSSR. Fizika Atmosfery i Okeana* [News of the Academy of Sciences of the U.S.S.R. Physics of the Atmosphere and Ocean], Tom 3, No. 8, 1967, p. 881-89. [Formulae for velocity of ice drift, tidal level oscillations, profile of tidal current and eddy coefficients. English translation in *Izvestiya. Academy of Sciences, U.S.S.R. Atmospheric and Oceanic Physics*, Vol. 3, No. 8, 1967 [pub. 1968], p. 512-16.
- KHEYSIN, D. YE. O chisle Reynoldsa dlya bitykh l'dov [Reynolds number for broken ice floes]. *Problemy Arktiki i Antarktiki* [Problems of the Arctic and Antarctic], Vyp. 26, 1967, p. 53-56.
- KOPTEV, A. P. O roli snezhnogo pokrova v protsessakh teploobmena [Role of snow cover in heat exchange processes]. *Problemy Arktiki i Antarktiki* [Problems of the Arctic and Antarctic], Vyp. 22, 1966, p. 82-89. [Effect when snow cover lies on floating ice.]
- KUPETSKIY, V. N. O lyuministsentsii morskikh l'dov [Luminescence of sea ice]. *Izvestiya Vsesoyuznogo Geograficheskogo Obshchestva* [News of the All-Union Geographical Society], Tom 99, Vyp. 1, 1967, p. 67-70. [Further examples of observation of this phenomenon.]
- LAKE, R. A. Heat exchange between water and ice in the Arctic Ocean. *Archiv für Meteorologie, Geophysik und Bioklimatologie*, Ser. A, Bd. 16, Ht. 2-3, 1967, p. 242-59. [Evaluation of heat balance terms on bottom surface of sea ice on basis of measurements of ice and water temperature, current velocity, and ablation or accretion of ice.]
- MAHREHOLTZ, O. Zur Tragfähigkeit von Eisdecken. *Zeitschrift für angewandte Mathematik und Mechanik*, Bd. 46, Sonderheft, 1966, p. T170-73. [Computation of load-bearing capacity of ice layers.]
- MEGURO, H., and others. Ice flora (bottom type): a mechanism of primary production in polar seas and the growth of diatoms in sea ice, by H. Meguro, K. Ito and H. Fukushima. *Arctic*, Vol. 20, No. 2, 1967, p. 114-33. [Study of diatoms, which cause layered structure of sea ice off Barrow, Alaska.]
- NAZINTSEV, YU. L. O ravnovesnom sostoyanii polyarnykh l'dov [The equilibrium state of polar ice]. *Problemy Arktiki i Antarktiki* [Problems of the Arctic and Antarctic], Vyp. 25, 1967, p. 77-83. [Factors affecting maximum thickness and rate of growth of floating ice in Arctic Ocean.]
- PAYNE, F. A. Further measurements on the effect of ice cover on shallow-water ambient sea noise. *Journal of the Acoustical Society of America*, Vol. 41, No. 5, 1967, p. 1374-76. [Measurements at Prince Edward Island.]
- ROBINSON, E. S. Seismic wave propagation on a heterogeneous polar ice sheet. *Journal of Geophysical Research*, Vol. 73, No. 2, 1968, p. 739-53. [Analysis of Antarctic results in terms of wave-guide theory of seismic propagation.]
- SHESTERIKOV, N. P. O pogloshchenii solnechnoy radiatsii l'dom pod snezhnitsy [Absorption of solar radiation by ice under puddles]. *Problemy Arktiki i Antarktiki* [Problems of the Arctic and Antarctic], Vyp. 25, 1967, p. 66-70. [Floating ice.]
- ZAKHAROV, V. F., and BULATOV, L. V. K otsenke velichiny stayavshego l'da v otkrytom more [Estimation of the amount of ice melted in the open sea]. *Problemy Arktiki i Antarktiki* [Problems of the Arctic and Antarctic], Vyp. 22, 1966, p. 127-28. [Method of approximate calculation of amount of melting which takes place as temperature rises.]

GLACIAL GEOLOGY

- ANDREWS, J. T., and BARRY, R. G. Zamechaniya po povodu stat'i ob otsupanii amerikanskogo lednika [Remarks on the retreat of the North American ice sheet]. *Izvestiya Vsesoyuznogo Geograficheskogo Obshchestva* [News of the All-Union Geographical Society], Tom 99, Vyp. 3, 1967, p. 230-31. [Comments on paper by N. R. Malkin, *ibid.*, Tom 98, Vyp. 4, 1966, p. 326-32.]
- DENTON, G. H., and STUIVER, M. Late Pleistocene glacial stratigraphy and chronology, northeastern St. Elias Mountains, Yukon Territory, Canada. *Geological Society of America. Bulletin*, Vol. 78, No. 4, 1967, p. 485-510. [Interpretation based on twenty ¹⁴C dates.]
- DONN, W. L., and EWING, M. A theory of ice ages. III. *Science*, Vol. 152, No. 3720, 1966, p. 1706-12. [Modification of theory proposed in *Science*, Vol. 127, No. 3307, 1958, p. 1159-62.]

- GILLBERG, G. Further discussion of the lithological homogeneity of till. *Geologiska Föreningens i Stockholm Förhandlingar*, Vol. 89, Pt. 1, No. 528, 1967, p. 29–49. [Study of moraines using granulometry, Ca analysis and distribution diagrams. Interpretation in terms of ice movement.]
- GJESSING, J. Potholes in connection with plastic scouring forms. *Geografiska Annaler*, Vol. 49A, No. 2–4, 1967, p. 178–87. [Description of form of potholes and discussion of their origin.]
- GROSVAL'D, M. G. Novaya lednikovaya gipoteza. A. T. Uilson: Velikiy shel'fovy lednik Antarktidy i drevniye oledneniya Zemli [A new glacial hypothesis. A. T. Wilson: The great Antarctic ice shelf and ancient glaciation of the Earth]. *Materialy Glyatsiologicheskikh Issledovaniy. Khronika. Obsuzhdeniya* [Materials of Glaciological Studies. News. Discussions], 12, 1966, p. 315–18. [Critique of Wilson's hypothesis in light of recent mass balance calculations.]
- HÄLBICH, I. W. Observations on primary features in Fish River series and the Dwyka series in South West Africa. *Transactions and Proceedings of the Geological Society of South Africa*, Vol. 67, 1964 [pub. 1967], p. 95–109. [Direction of movement of glaciers determined.]
- KATASONOV, YE. M. L'dy v morskikh otlozheniyakh [Ice in marine deposits]. *Priroda* [Nature], 1967, No. 6, p. 107–10. [Buried sea ice in northern Siberia.]
- KING, C. A. M., and BUCKLEY, J. T. The chronology of deglaciation around Ege Bay and Lake Gillian, Baffin Island, N.W.T. *Geographical Bulletin*, Vol. 9, No. 1, 1967, p. 20–32. [The stages of deglaciation are traced and related to sea-level.]
- MALKIN, N. R. Otstupaniye amerikanskogo lednika i smeshcheniye putel tsiklonov [Retreats of the American ice sheet and the shifting of cyclone paths]. *Izvestiya Vsesoyuznogo Geograficheskogo Obshchestva* [News of the All-Union Geographical Society], Tom 98, Vyp. 4, 1966, p. 326–32. [Discussion of North American glacial history in terms of theory of glacier fluctuations based on changing paths of depressions.]
- MERCER, J. H. Glacier resurgence at the Atlantic/sub-boreal transition. *Quarterly Journal of the Royal Meteorological Society*, Vol. 93, No. 398, 1967, p. 528–34. [Suggests the cool phase was as severe as at the start of the sub-Atlantic.]
- SHUMILOV, N. A. O dinamike pokrovnykh lednikov poslednego oledneniya [Dynamics of ice sheets of the last glaciation]. *Izvestiya Vsesoyuznogo Geograficheskogo Obshchestva* [News of the All-Union Geographical Society], Tom 99, Vyp. 3, 1967, p. 195–207.
- WORSFOLD, R. J. Physiography and glacial geomorphology of Heimfrontfjella, Dronning Maud Land. *British Antarctic Survey Bulletin*, No. 11, 1967, p. 49–57. [Results of geological and topographical surveying carried out in 1963–64 and 1964–65 from Halley Bay station.]

FROST ACTION ON ROCKS AND SOIL. FROZEN GROUND. PERMAFROST

- BENDIX-ALMGREEN, S. E., and others. Notes on the geology and geomorphology of the Carey Øer, north-west Greenland, [by] S. E. Bendix-Almgreen, B. Fristrup and R. L. Nichols. *Meddelelser om Grønland*, Bd. 164, Nr. 8, 1967, 16 p. [Periglacial features such as frost-cracks, solifluction lobes, frost mounds, frost-shattered rock, talus, permafrost and snowbank trimlines are common in this group of small islands.]
- CHAMBERS, M. J. G. Investigations of patterned ground at Signy Island, South Orkney Islands. II. Temperature regimes in the active layer. *British Antarctic Survey Bulletin*, No. 10, 1966, p. 71–83. [Analysis of soil temperature records shows surface meteorological data to be inadequate for predicting freeze–thaw cycles.]
- GENTILESCHI, M. L. Forme crionivali sul Gran Sasso d'Italia. *Bollettino della Società Geografica Italiana*, Ser. 9, Vol. 8, Fasc. 1–3, 1967, p. 34–61. [Description of periglacial forms above 2 000 m in this part of Italy. English summary.]
- GENTILESCHI, M. L. Forme crionivali sulla Maiella. *Bollettino della Società Geografica Italiana*, Ser. 9, Vol. 8, Fasc. 7–9, 1967, p. 325–50. [Description of periglacial forms above 2 000 m in this part of Italy. English summary.]
- SCHENK, E. On the formation of string bogs and aapamoors of the Arctic and Antarctic. *Zeitschrift für Geomorphologie*, Bd. 10, Ht. 4, 1966, p. 346–68. [These formations are attributed to collapse of permafrost.]
- WASHBURN, A. L. Instrumental observations of mass-wasting in the Mesters Vig district, northeast Greenland. *Meddelelser om Grønland*, Bd. 166, Nr. 4, 1967, 296 p. [Quantitative observations carried out from 1956 to 1961 at a number of experimental sites and resulting conclusions.]
- WERNER, M., and others. On the detection of water on the Moon, [by] M. Werner, T. Gold and M. Harwit. *Planetary and Space Science*, Vol. 15, No. 4, 1967, p. 771–74. [If permafrost layer exists below surface of Moon it should produce water vapour detectable from Earth.]
- WILLIAMS, P. J. Pore pressures at a penetrating frost line and their prediction. *Géotechnique*, Vol. 16, No. 3, 1966, p. 187–208. [Apparatus described for determining pore pressures developed immediately below a penetrating frost line.]
- ZAMORUYEV, V. V. Kamennyye gletchery v khrēbte Khamar-Daban [Rock glaciers in Khamar-Daban mountain range]. *Izvestiya Vsesoyuznogo Geograficheskogo Obshchestva* [News of the All-Union Geographical Society], Tom 97, Vyp. 1, 1965, p. 80–81.

METEOROLOGICAL AND CLIMATOLOGICAL GLACIOLOGY

- BAILEY, I. H., and MACKLIN, W. C. Heat transfer from artificial hailstones. *Quarterly Journal of the Royal Meteorological Society*, Vol. 94, No. 399, 1968, p. 93–98. [Rates of melting measured.]
- BAILEY, I. H., and MACKLIN, W. C. The surface configuration and internal structure of artificial hailstones. *Quarterly Journal of the Royal Meteorological Society*, Vol. 94, No. 399, 1968, p. 1–11. [Study of hailstones grown in a wind tunnel. Drag coefficients measured.]
- BROWNING, K. A. The growth environment of hailstones. *Meteorological Magazine*, Vol. 96, No. 1140, 1967, p. 202–11. [Discussion of two models.]

- BROWNING, K. A. The lobe structure of giant hailstones. *Quarterly Journal of the Royal Meteorological Society*, Vol. 92, No. 391, 1966, p. 1-14. [Photographs of thin sections through 5 giant hailstones presented to portray their bubble and crystal structures.]
- MACKLIN, W. C., and BAILEY, I. H. On the critical liquid water concentrations of large hailstones. *Quarterly Journal of the Royal Meteorological Society*, Vol. 92, No. 392, 1966, p. 297-300.
- MARSHUNOVA, M. S., and RUSIN, N. P. Sravnitel'naya kharakteristika radiatsionnogo rezhima Arktiki i Antarktiki [Comparative characteristics of the radiation regime of the Arctic and Antarctic]. *Problemy Arktiki i Antarktiki [Problems of the Arctic and Antarctic]*, Vyp. 24, 1966, p. 30-34.
- MOSSOP, S. C., and others. Studies of ice crystals in natural clouds, by S. C. Mossop, A. Ono and K. J. Heffernan. *Journal de Recherches Atmosphériques*, Vol. 3, No. 2, 1967, p. 45-64. [Continuous particle sampler used in aircraft to replicate particles in clouds. Shapes under different conditions illustrated. Concentration of ice particles larger than expected.]
- PYATNENKOV, B. A. O radiatsionnom balanse atmosfery Antarktiki [Radiation balance of the Antarctic atmosphere]. *Problemy Arktiki i Antarktiki [Problems of the Arctic and Antarctic]*, Vyp. 24, 1966, p. 35-45. [Discussion of factors affecting radiation in Antarctic.]
- ROSINSKI, J. Solid water-insoluble particles in hailstones and their geophysical significance. *Journal of Applied Meteorology*, Vol. 5, No. 4, 1966, p. 481-92. [Number and concentration of particles found and interpreted.]
- YOUNG, R. G. E., and BROWNING, K. A. Wind tunnel tests of simulated spherical hailstones with variable roughness. *Journal of the Atmospheric Sciences*, Vol. 24, No. 1, 1967, p. 58-62. [Determination of drag coefficient.]

SNOW

- ALDAZ, L., and DEUTSCH, S. On a relationship between air temperature and oxygen isotope ratio of snow and firn in the South Pole region. *Earth and Planetary Science Letters*, Vol. 3, No. 3, 1967, p. 267-73. [Relationship between oxygen isotope ratio and temperature of effective condensation level.]
- BURROWS, D. A., and others. Factors affecting the electric charge acquired by an ice sphere moving through natural snowfall, [by] D. A. Burrows, P. V. Hobbs and W. D. Scott. *Monthly Weather Review*, Vol. 95, No. 12, 1967, p. 878-83. [Measurements show positive charge when graupel present, otherwise sign depends on atmospheric electric field. Mechanism discussed.]
- GUNN, K. L. S. The number flux of snow crystals at the ground. *Monthly Weather Review*, Vol. 95, No. 12, 1967, p. 921-24. [Measurements show that main contribution to increase in snowfall rate is formation of new crystals rather than growth of existing ones.]
- MAGONO, C., and ORIKASA, K. Models of charge distribution in and under clouds during snowfall. *Journal of the Meteorological Society of Japan*, Vol. 44, No. 5, 1966, p. 280-85. [Several models proposed which explain observed surface electric fields.]
- MAGONO, C., and ORIKASA, K. On the disturbance of surface electric field caused by snowfall. *Journal of the Meteorological Society of Japan*, Vol. 44, No. 5, 1966, p. 260-79. [Analysis of results of observations.]
- PROTSENKO, V. F. Ob izmerenii plotnosti snezhnogo pokrova [On the measurement of snow cover density]. *Meteorologiya i Gidrologiya [Meteorology and Hydrology]*, 1967, No. 7, p. 105-07. [Comparison of measurement using permanent markers with 1 km survey strips.]
- VANNI, M. La marche de la limite inférieure du manteau neigeux temporaire dans la vallée de St. Barthélemy au cours des hivers 1964-65 et 1965-66. *Bollettino del Comitato Glaciologico Italiano*, 2 Ser., No. 13, Pt. 2, 1962-63, [pub.] 1967, p. 43-54. [Data on the behaviour of the lower limit of the temporary snow cover and some conclusions drawn.]
- VANNI, M. Le valanghe nell'alta Valtournanche. *Bollettino del Comitato Glaciologico Italiano*, 2 Ser., No. 12, Pt. 2, 1961-62, [pub.] 1966, p. 55-64. [Describes avalanches of Valtournanche region, Aosta valley.]
- YEN, Y. C. The rate of temperature propagation in moist porous mediums with particular reference to snow. *Journal of Geophysical Research*, Vol. 72, No. 4, 1967, p. 1283-88. [Heat transfer equation, neglecting effect of radiation and convection but including effect of vapour diffusion in porous media, formulated and solved numerically for snow, in density range from 0.1 to 0.45 g/cm³.]