

## 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.

### CONFERENCES

[CLOUD PHYSICS.] *Proceedings of the international conference on cloud physics, August 26-30, 1968, Toronto, Canada. Sponsors: International Association of Meteorology and Atmospheric Physics of the International Union of Geodesy and Geophysics, World Meteorological Organization, American Meteorological Society, Canadian Meteorological Society, National Research Council of Canada.* No place, no publisher, [1968?]. xv, 873 p. [For details of relevant papers see elsewhere in this list.]

GOLD, L. W., and WILLIAMS, G. P., *comp.* Ice pressures against structures: proceedings of a conference held at Laval University, Quebec, 10-11 November 1966 . . . with the papers and discussion presented at the seminar on ice formation on lakes and rivers, sponsored by the Canadian National Committee of the International Hydrologic Decade and held at Laval University, Quebec, 9 November 1966. *Canada. National Research Council. Associate Committee on Geotechnical Research. Technical Memorandum No. 92, 1968, vi, 247 p.* (NRC No. 9851.) \$3.50. [Contains papers and discussions from these two meetings and appendixes with associated papers of interest. Papers include: R. F. Legget and L. W. Gold, "Ice pressure on structures—a Canadian problem", p. 1-4; A. S. Krausz, "Plastic deformation of fresh-water ice", p. 5-12; L. W. Gold, "Elastic and strength properties of fresh-water ice", p. 13-23; W. F. Weeks and A. Assur, "The mechanical properties of sea ice", p. 25-78; G. E. Frankenstein, "Strength of ice sheets", p. 79-87; G. R. Kendall, "Meteorological information relevant to ice pressures", p. 89-94; M. Drouin, "Static ice force on extended structures", p. 95-108; N. Y. Lavoie, "Ice effects on structures in the Northumberland Strait crossing", p. 109-15; H. R. Peyton, "Sea ice forces", p. 117-23; J. Nuttall and L. W. Gold, "Model study of ice pressures", p. 125-30; M. C. van Wijk, "The use of photogrammetry for measuring the movement of ice covers", p. 131-34; L. W. Gold, "Observations on the movement of ice at a bridge pier", p. 135-41; R. C. Sommerville and G. E. Burns, "Damage to a Winnipeg reservoir due to ice", p. 143-51; D. E. Nevel, "Lifting forces exerted by ice on structures", p. 155-61; B. Michel, "Thrust exerted by an unconsolidated ice cover on a boom", p. 163-70; P. Donnelly, "An outline of the design and operation of the Montreal ice control structure", p. 171-84; R. J. Kennedy, "On the expansion of a floating ice sheet with temperature change", p. 185-87; P. Donnelly, "Montreal ice control structure failure of four stop-logs during winter 1966-67", p. 189. Statements of research problems pertaining to ice pressures: C. Neill, "Bridge piers and similar isolated structures", p. 191-94; M. Drouin, "Forces exerted by static ice covers on extended structures", p. 194-96; B. Michel, "Ice formation and break-up in rivers", p. 196-99; L. W. Gold, "The forces that ice can exert on structures", p. 199-202. Papers presented to the seminar on ice formation: G. P. Williams, "Freeze-up and break-up of fresh-water lakes", p. 203-15; C. E. Deslauriers, "Ice break-up in rivers", p. 217-29; B. Michel, "Ice covers in rivers", p. 231-47.]

### GENERAL GLACIOLOGY

BRUMAN, J. R. Ice on the moon. *Icarus*, Vol. 8, No. 1, 1968, p. 198-201. [Proposes that maria and large craters with mare-like floors are result of collisions with large bodies of ice.]

CHORLEY, R. J., *ed.* *Water, Earth and man. A synthesis of hydrology, geomorphology and socio-economic geography.* London, Methuen and Co. Ltd., [c1969]. xix, 588 p. [Integrated study of water on the Earth. Includes following articles on snow and ice: M. G. Marcus, "The hydrology of snow and ice", p. 359-67; I. S. Evans, "The geomorphology and morphology of glacial and nival areas", p. 369-80; B. A. Kennedy, "Periglacial morphometry", p. 381-88; J. Rooney, "The economic and social implications of snow and ice", p. 389-401.]

CLARK, R. H., and FULTON, J. F. The Canadian IHD program. *Proceedings of the Western Snow Conference*, 35th annual meeting, 1967, p. 105-11. [Review of Canadian activities in the International Hydrological Decade, 1965-74.]

EMBLETON, C., and KING, C. A. M. *Glacial and periglacial geomorphology.* [London], Edward Arnold (Publishers) Ltd., 1968. xvi, 608 p.

KUSUNOKI, H. Atarashii seppyō no jutsugoshū [New technical glossary on snow and ice]. *Seppyō*, [Vol.] 29, [No.] 5, 1967, p. 155-62. [Japanese translation of *Illustrated glossary of snow and ice*, by T. E. Armstrong, B. B. Roberts and C. W. M. Swinbank.]

PEROV, V. F. *Snezhniki, ledniki i merzlotnyy rel'ief Khibniskikh gor* [Névés, glaciers and permafrost relief of the Khibin mountains]. Moscow, Izdatel'stvo "Nauka", 1968. 120 p. (Rezultaty Issledovaniy po Mezhdunarodnym Geofizicheskim Proyektam. Glyatsiologiya, No. 22.) [Study of the role of snow patches, small glaciers, and periglacial conditions in geomorphological processes in the area in extreme north-west U.S.S.R. English summary, p. 110-11.]



- QUERVAIN, M. R. DE. Prof. Dr. Robert Haefeli und die Schnee- und Eisforschung. *Schweizerische Bauzeitung*, Jahrg. 86, Ht. 31, 1968, p. 541-43. [Summary of R. Haefeli's contributions to glaciology.]
- WELLER, G. E. The heat budget and heat transfer processes in Antarctic plateau ice and sea ice. *ANARE Scientific Reports*. Series A(IV). Glaciology. Publication No. 102, 1968, [vi], 155 p. [Study of surface heat balance and sub-surface balance on blue ice in the coastal ablation zone and sea ice.]
- ZAVATTI, S. Terminologia geoglacologica polare. *Istituto Geografico Polare. Pubblicazioni Scientifiche*, 6, 1969, 20 p. [A list of English glaciological terms, mostly concerned with sea ice, with definitions in Italian and equivalents in Italian and other languages.]

## GLACIOLOGICAL INSTRUMENTS AND METHODS

- AMBACH, W., and EISNER, H. Pb-210-Methode zur Datierung von Eis eines alpinen Gletschers. *Acta Physica Austriaca*, Bd. 27, Ht. 1-3, 1968, p. 271-74. [Data from Kesselwandferner, Austria, presented to show that method based on radioactivity of natural  $^{210}\text{Pb}$  can be used to date temperate glacier ice.]
- BURGE, W., and PARKER, D. C. Infrared survey in Antarctica. *Antarctic Journal of the United States*, Vol. 3, No. 4, 1968, p. 120. [Preliminary report of evaluation of air-borne survey which differentiates many snow and ice features.]
- DAVIS, B. L., and BLAIR, D. N. An isothermal cloud chamber for use with x-ray diffraction. *Proceedings of the international conference on cloud physics, August 26-30, 1963, Toronto, Canada*, [1968?], p. 275-79. [Technique for quantitative X-ray study of newly formed ice particles in artificial cloud.]
- GOTTFRIED, G. J., and CAMPBELL, C. J. A shielded thermistor probe with portable instrument for measuring snowpack temperatures. *U.S. Forest Service Research Note RM-120*, 1968, 3 p. [Device for measuring temperature profiles through snow to 0.1°C.]
- LLIBOUTRY, L. Implantation et exploitation d'un réseau de balises d'ablation glaciaire. (*In Mélanges offerts par ses amis et disciples à Maurice Pardé*. Paris, Éditions Ophrys, 1968, p. 373-86.) [Practical rules for the use of stakes to measure ablation on a glacier.]
- MATTHEWS, B. Automatic measurement of frost-heave: results from Malham and Rodley (Yorkshire). *Geoderma*, Vol. 1, No. 2, 1967, p. 107-15. [Description of instrument.]
- ODENCRANTZ, F. K., and HUMISTON, L. E. Replicator for ice crystals. *Review of Scientific Instruments*, Vol. 39, No. 12, 1968, p. 1870-72. [Apparatus for making in the field replicas of small ice crystals suitable for optical or scanning electron microscope examination.]
- OWE-BERG, T. G., and GAUKLER, T. A. Confinement of charged particles in a nonuniform AC field. *Proceedings of the international conference on cloud physics, August 26-30, 1963, Toronto, Canada*, [1968?], p. 861-65. [Apparatus for suspending charged ice particles or droplets.]
- SASAKI, I., and TŌKAIRIN, A. Ēsu shitsudokei no teion tokusei ni tsuite [The characteristics of the ACE hygrometer at low temperatures below 0°C]. *Seppyo*, [Vol.] 30, [No.] 4, 1968, p. 103-10. [Tests on this hygrometer with small sensing element made of pith of a plant, show it to be very suitable for low temperature use, e.g. above an ice surface. English abstract.]
- SMITH, F. M., and others. Measuring snow depths by aerial photogrammetry: evaluation and recommendations, by F. M. Smith, C. F. Cooper and E. G. Chapman. *Proceedings of the Western Snow Conference*, 35th annual meeting, 1967, p. 66-72. [Discusses reliability and usefulness.]
- TAKAHASHI, K. Saishin sekisetsu shishikei ni tsuite [On the snow scale for measuring maximum snow depth]. *Seppyo*, [Vol.] 30, [No.] 4, 1968, p. 111-14. [Report of a device for recording the maximum depth which snow attained. English abstract.]
- TAKAHASHI, Y. A practical and simple method for determining the number of ice nuclei in air. *Proceedings of the international conference on cloud physics, August 26-30, 1963, Toronto, Canada*, [1968?], p. 217-21.
- WARNER, C., and GUNN, K. L. S. Measurement of snowfall by optical attenuation. *Journal of Applied Meteorology*, Vol. 8, No. 1, 1969, p. 110-21. [Description of method of measuring falling snow which gives good time resolution.]
- WATANABE, S., and NEZU, S. Sekisetsu chinkōryoku no ichi kansokurei [A trial for observation of settling pressure of deposited snow]. *Seppyo*, [Vol.] 30, [No.] 3, 1968, p. 70-72. [Measurement of force on a horizontal board 1 m above ground level. English abstract.]

## PHYSICS OF ICE

- ARNOLD, G. P., and others. Neutron diffraction study of ice polymorphs. III. Ice Ic, [by] G. P. Arnold, E. D. Finch, S. W. Rabideau and R. G. Wenzel. *Journal of Chemical Physics*, Vol. 49, No. 10, 1968, p. 4365-69. [Neutron diffraction study at 80 K of polycrystalline  $\text{D}_2\text{O}$  cubic ice.]
- AUFDERMAUR, A. N. Relations between the local heat and mass transfer and the local accretion rate. *Proceedings of the international conference on cloud physics, August 26-30, 1963, Toronto, Canada*, [1968?], p. 411-15. [Laboratory measurements.]
- BAGDADE, W. A. Far infrared absorption in disordered materials. *Dissertation Abstracts*, B, Vol. 28, No. 1, 1967, p. 312-B-313-B. [Analysis of absorption due to randomized charges applied, among other things, to ice Ih. Abstract of dissertation submitted to University of California, Berkeley. Copies of original available from University Microfilms, Ann Arbor, Mich., U.S.A. Order No. 67-8516.]
- BAJOREK, A., and others. Investigation of the dynamics of water molecules in crystallo-hydrates by neutron inelastic scattering, by A. Bajorek [and 9 others]. (*In Neutron inelastic scattering. Proceedings of a symposium on neutron inelastic scattering held by the International Atomic Energy Agency in Copenhagen 20-25 May, 1963*. Vol. 2. Vienna, I.A.E.A., 1968, p. 143-58.) [Neutron inelastic scattering used to determine translatory and rotatory frequencies of (among other things)  $\text{H}_2\text{O}$  ice and comparison with infra-red data.]



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- BOL, W. X-ray diffraction and structure of water. *Journal of Applied Crystallography*, Vol. 1, Pt. 4, 1968 [pub. 1969], p. 234–41. [X-ray diffraction study of liquid water used to deduce radial distribution function which is compared with that for the various phases of ice.]
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- BRIVATI, J. A., and others. Unstable intermediates. Part LIX. Electron spin resonance studies from 4 to 77°K of hydrogen-bonded hydroxyl radicals in  $\gamma$ -irradiated ice, by J. A. Brivati, M. C. R. Symons, D. J. A. Tinling, and D. O. Williams. *Journal of the Chemical Society, Sect. A*, 1969, [Pt.] 4, p. 719–20. [Anomalous spectra at 77 K from hydrogen bonded hydroxyl radicals shown to result from librations frozen out at lower temperatures.]
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- BULLEMER, B., and others. Experiments on the nature of charge carriers in ice, by B. Bullemer, H. Engelhardt, L. Knoblauch, N. Riehl and C. Schroder-Etzdorf. *Solid State Communications*, Vol. 6, No. 8, 1968, p. 545–47. [Guard-ring method used to separate bulk from surface conductivity and to establish that majority bulk carriers are protons.]
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- DANTL, G. Alterungsvorgänge in einkristallinem Eis. *Polarforschung*, Bd. 6, Jahrg. 37, Ht. 1–2, 1967 [pub. 1968], p. 129–32. [Summary of physical properties of ice single crystals which are found to change with time since crystal was grown.]
- DÉZSI, I., and others. Mössbauer study of SnCl<sub>2</sub> and Dy(ClO<sub>4</sub>)<sub>3</sub> in ice, by I. Dézsi, N. A. Eissa, L. Keszthelyi, B. Molnár, and D. L. Nagy. *Physica Status Solidi*, Vol. 30, No. 1, 1968, p. 215–18. [Mössbauer lines in frozen solutions of both salts disappear above –90°C.]
- DILORENZO, J. V., and KAPLAN, M. Pseudo-melting of doped ice at –65°C. *Chemical Physics Letters*, Vol. 2, No. 7, 1968, p. 509–12. [Mössbauer studies on ice doped with both <sup>57</sup>Fe and <sup>151</sup>Eu give results quite different from those with either doping separately. The results indicate a pseudo-melting at –65°C.]
- DRAKE, J. C. Electrification accompanying the bursting of air bubbles in melting ice. *Proceedings of the international conference on cloud physics, August 26–30, 1963, Toronto, Canada*, [1968?], p. 614–18.
- FINCH, E. D., and others. Neutron diffraction study of ice polymorphs. II. Ice II, [by] E. D. Finch, S. W. Rabideau, R. G. Wenzel and N. G. Nereson. *Journal of Chemical Physics*, Vol. 49, No. 10, 1968, p. 4361–65. [Neutron diffraction study of polycrystalline D<sub>2</sub>O ice II is in agreement with the structure predicted by Kamb.]
- FISCHER, S. F., and others. Proton-phonon coupling in a hydrogen bonded system, [by] S. F. Fischer, G. L. Hofacker and J. R. Sabin. *Physik der kondensierten Materie*, Bd. 8, Ht. 4, 1969, p. 268–78. [A one-dimensional theory of proton movement in an ice-like system shows coupling with phonons.]
- FLETCHER, N. H. Ice nucleation behavior of silver iodide smokes containing a soluble component. *Journal of the Atmospheric Sciences*, Vol. 25, No. 6, 1968, p. 1058–60. [Calculation of nucleation ability on assumption that process is nucleation of droplet.]
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- HALLETT, J. The influence of defect structure on the growth of ice crystals. *Proceedings of the international conference on cloud physics, August 26–30, 1963, Toronto, Canada*, [1968?], p. 199–203. [Dislocation structure may influence habit of ice crystals and explain e.g. triangular crystals.]
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- HASE, H., and KEVAN, L. Spatial distribution of trapped electrons in alkaline ice produced by photoionization. *Journal of the American Chemical Society*, Vol. 90, No. 24, 1968, p. 6875-76. [Letter. Study of ice containing NaOH and K<sub>4</sub>Fe(CN)<sub>6</sub> after photoionization. Difference from effect of  $\gamma$ -irradiation.]
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- HIGASHI, A., and others. Strength of ice single crystals in relation to the dislocation structure, by A. Higashi, S. Mae and A. Fukuda. (In *Proceedings of the international conference on the strength of metals and alloys, September 1967, Tokyo, Japan*. Tokyo, Japan Institute of Metals, 1968, p. 784-89. (*Transactions. Japan Institute of Metals*, Vol. 9, Supplement.)) [X-ray topographic studies of ice crystals before and after basal glide, and results of mechanical tests in basal and non-basal glide.]
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