GLACIOLOGICAL LITERATURE

This selected list of glaciological literature has been prepared by J. W. Glen with the assistance of T. H. Ellison, W. B. Harland, Miss D. M. Johnson, W. H. Ward, G. T. Warwick and the Staff of the Scott Polar Research Institute. Its field is 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. Glen of publications of glaciological interest.

In this list, to avoid repetition, the references to papers in the proceedings of two recent conferences have been abbreviated. The full references to both publications are given in the section CONFERENCES below.

CONFERENCES


GLACIOLOGICAL INSTRUMENTS AND METHODS


BOGORODSKY, V. V. Ul’trazvukovoy metod opredeleniya toshchiny ledov [Ultrasonic method of determining the thickness of ice]. Problemy Arktiliki [Problems of the Arctic], 1958, Vyp. 4, p. 65-77. [Experiments giving good results with sea ice up to 1 m. and fresh water ice up to 1'4 m. thick.]

BROCKMANN, B. Reflektionsseismische Wiederholungsmessungen auf dem Pasterzegletscher und ihre Bedeutung für die Feststellung von Gletscher- und Inlandeisschwankungen. Union Geodesique ... Chamonix, 1957, Tom. 4, 1958, p. 509-13. [Use of seismic or gravity sounding to study changes of glacier thickness demonstrated by comparing measurements on Pasterze in 1929 and 1953.]

WARD, W. H. Surface markers for ice movement surveys (Cambridge Austerdalsbre Expedition). Union Geodesique ... Chamonix, 1958, p. 105-10. [Description of augers and markers used for accurate surface velocity and strain measurement.]

PHYSICS OF ICE


BLACKMAN, M., and LISGARTEN, N. D. The cubic and other structural forms of ice at low temperature and pressure. Proceedings of the Royal Society, Ser. A, Vol. 239, No. 1216, 1957, p. 93-107. [Study of crystallography of ice deposited from vapour at low temperatures shows that vitreous, cubic or hexagonal ice can be formed. Similar results obtained with D2O.]

BLACKMAN, M., and LISGARTEN, N. D. Electron diffraction investigations into the cubic and other structural forms of ice. Advances in Physics, Vol. 7, No. 26, 1958, p. 189-98. [Review of studies made on ice at ordinary pressures which give evidence for structures other than hexagonal structure of ice-I.]

BUTKOVICH, T. R., and LANDAUER, J. K. The flow law for ice. Union Geodesique ... Chamonix, 1958, p. 318-27. [Results of creep tests on single crystals and polycrystalline ice including ice from Greenland.]

FUKUTA, N. Experimental investigations on the ice-forming ability of various chemical substances. Journal of Meteorology, Vol. 15, No. 1, 1958, p. 17-26. [Careful determination of threshold temperatures for many substances.]


GLEN, J. W. The flow law of ice: a discussion of the assumptions made in glacier theory, their experimental foundations and consequences. Union Geodesique ... Chamonix, 1958, p. 171-83. [Evidence that usual assumptions are not strictly true. Suggestions concerning possible alternatives.]

GRÄNCHER, H., and others. Dielectric relaxation and the electrical conductivity of ice crystals, by H. Gränicher, C. Jaccard, P. Scherrer and A. Steinmann. Discussion of the Faraday Society, No. 23, 1957, p. 50-62. [Experiments on frequency variation of dielectric constant in ice, both pure and containing fluoride ions, are discussed theoretically.]

Higuchi, K. Layer structure of ice crystal revealed by etching figures. Union Géodésique ... Chamonix, 1958, p. 49-53. [Observation of stepped surfaces in etch pits in ice.]


Lavrov, V. V. Elektroprovodnost' l'da [Electrical conductivity of ice]. Problemy Arkтики [Problems of the Arctic], 1958, Vyp. 3, p. 79-82. [Experiments on resistance of polycrystalline ice from 0° to -25° C.]


Mason, B. J. The supercooling and nucleation of water. Advances in Physics, Vol. 7, No. 26, 1958, p. 221-34. [Review article.]


Mason, B. J., and Hallett, J. Ice-forming nuclei. Nature, Vol. 179, No. 4555, 1957, p. 357-59. [Investigations show that AgI, PbI. and CuS are efficient nuclei, but that most other reported nuclei are not.]

Nakaya, U. Visco-elastic properties of snow and ice in Greenland ice cap. Union Géodésique ... Chamonix, 1958, p. 199-212. [Results of measurements of elastic constant by oscillation, and of damping of oscillations, for samples of snow and ice from Greenland.]

Nakaya, U. The deformation of single crystals of ice. Union Géodésique ... Chamonix, 1958, p. 229-40. [Results of bending tests on ice single crystals. Explanation of the geometry of deformation in terms of slip on glide planes and development of small angle boundaries.]

Ockman, N. The infra-red and Raman spectra of ice. Advances in Physics, Vol. 7, No. 26, 1958, p. 199-220. [Reviews experimental data and their theoretical interpretation in terms of structure and dynamics of ice lattice.]

Owston, P. G. The structure of ice-I, as determined by X-ray and neutron diffraction analysis. Advances in Physics, Vol. 7, No. 26, 1958, p. 171-88. [Review article discussing in particular positions of hydrogen in ice.]


Petrov, B. B., and Levy, H. A single-crystal neutron diffraction study of heavy ice. Acta Crystallographica, Vol. 10, 1957, p. 70-76. [Investigation of crystal structure is in agreement with Pauling's model. Thermal parameters give data on deuterium vibration in D2O.]


Shalcross, F. V., and Carpenter, G. B. X-ray diffraction study of the cubic phase of ice. Journal of Chemical Physics, Vol. 26, No. 4, 1957, p. 782-84. [Results, including unit cell dimensions.]

Shumsky, P. A. The mechanism of ice straining and its recrystallization. Union Géodésique ... Chamonix, 1958, p. 244-48. [Discussion of process of firmification and of processes of deformation of ice.]

Stephen, R. W. B. Thermodynamics of ice at the melting point. Union Géodésique ... Chamonix, 1958, p. 254-65. [Considers thermodynamics of melting in a temperate glacier and concludes that mechanical properties of ice are not seriously affected by small quantities of water.]

Stephen, R. W. B. The mechanical properties of ice. II. The elastic constants and mechanical relaxation of ice single crystals. Advances in Physics, Vol. 7, No. 26, 1958, p. 666-75. [Review article dealing with elastic constants of ice single crystals, with damping of mechanical vibrations in ice, and with theoretical interpretation of damping.]


**Land ice. Glaciers. Ice shelves**


Avsyuk, G. A. Certains renseignements sur le mouvement de la glace dans les glaciers du Thian-Chian. Union Géodésique ... Chamonix, 1958, p. 72-104. [Description and velocity distribution in four typical Tyan-Shan' glaciers. Inyl'chek, Petrov, Karabaïtak and Akad. A. A. Grigoriev.]

Baudart, M. Essai de détermination par photogrammétrie de la vitesse superficielle d’un glacier du Groenland. Union Géodésique ... Chamonix, 1958, p. 8-10. [Method of determining glacier velocity using aerial photographs without ground control. Results for Umiamako Island.]

Bogoslovski, V. N. The temperature conditions (regime) and movement of the Antarctic glacial shield. Union Géodésique ... Chamonix, 1958, p. 287-905. [Measurements of temperature of ice during journey from "Mirnyy" to "Pionerskaya". Theory of temperature distribution.]

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Meier, M. F. The mechanisms of crevasse formation. *Union Géodésique* ... Toronto, 1957, Tom. 4, 1958, p. 500-08. [Measurement of strain rates and of opening crevasses allow deductions to be made concerning conditions for crevasse formation.]

Meier, M. F. Vertical profiles of velocity and the flow law of glacier ice. *Union Géodésique* ... Chamonix, 1958, p. 169-70. [Evidence given by vertical velocity profiles concerning flow law of ice, and programme for future work.]

Mercanton, P.-L. Un demi-siècle d'observations à l'échelle nivométrique de l'Eiger. *Union Géodésique* ... *Toronto*, 1957, Tom. 4, 1958, p. 222-24. [Report on results found in 1906-56 for height of snow surface as measured by a scale on rock wall.]


Miller, M. M. Phenomena associated with the deformation of a glacier bore-hole. *Union Géodésique* ... Toronto, 1957, Tom. 4, 1958, p. 437-52. [Measurements in pipe sunk into Taku Glacier, Alaska. Interpretation of results.]


Nye, J. F. A theory of wave formation in glaciers (Cambridge Austerdalsbreen Expedition). *Union Géodésique* ... Chamonix, 1958, p. 139-54. [Theory of formation of wave ogives by ablation developed and applied to Austerdalsbreen.]

Pal'gov, N. N. Steklenye oledeniyev Zahtiyoskom Altai [Contemporary glaciation in the Zailisky Alatau]. Alma-Ata, Izdatel'stvo Akademii Nauk Kazakhskoy SSR [Publishing House of the Academy of Sciences of the Kazakh SSR.], 1958, 312 p. [Description of ice-covered area near Alma-Ata, including balance, rate of melting, and size of run-off.]


Pilewizer, W. Neue Erkenntnisse über die Blockbewegung der Gletscher. *Union Géodésique* ... Toronto, 1957, Tom. 4, 1958, p. 429-46. [Discussion of occurrence of Blockschollen movement in glaciers and possible causes.]


Schytt, V. The inner structure of the ice shelf at Maudheim as shown by core drilling. *Norwegian-British-Swedish Antarctic Expedition, 1949-52. Scientific Results* (O s l o, Norsk Polarinstitutt), Vol. 4, C, 1958, p. 113-52. [Lat. 71° 03' S., long. 16° 26' W.]


Sharpe, R. P., and Erstein, S. Oxygen-isotope ratios and glacier movement. *Union Géodésique* ... Chamonix, 1958, p. 359-61. [Use of this technique to solve specific problems. Examples from Saskatchewan and Malaspina Glaciers.]

Steinemann, S. Résultats expérimentaux sur la dynamique de la glace et leurs correlations avec le mouvement et la pétrographie des glaciers. *Union Géodésique* ... Chamonix, 1958, p. 184-99. [Results of laboratory tests on ice are used to show how structure of glaciers results from metamorphic processes, particularly recrystallization.]


TAMMERMANN, S. The jökulhlaup from the Katla area in 1955 compared with other jökulhlaups in Iceland.

TÖTTÖNEN, D. Un extension de l'équation de continuité aux glaciers. Union Géodésique ..., Chamonix, 1958, p. 227-28. [Consideration of continuity conditions used to introduce characteristic time of a glacier.]


WEECKMAN, J. Travelling waves on glaciers. Union Géodésique ..., Chamonix, 1958, p. 162-68. [Theory of movement of waves of increased thickness in ice shelves and glaciers.]

WEIDICK, A. Gletscherandringen in Grenland og Europa i historisk tid. Grønland, 1958, Nr. 4, p. 137-45. [Glacier variations in Greenland since about 1750.]


ZUMBERGE, J. H. Preliminary report on the Ross Ice Shelf deformation project. Union Géodésique ..., Chamonix, 1958, p. 56-63. [Description of snow stratigraphy, surface features associated with deformation of shelf, thermal studies, and future programme.]

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ICEBERGS, SEA, RIVER AND LAKE ICE

DUNBAR, M. Curious open water feature in the ice at the head of Cambridge Fjord. Union Géodésique ..., Toronto, 1957, Tom. 4, 1958, p. 514-19. [Circular pool that appears regularly in otherwise continuous sea ice. Possible explanations.]


KUPERSHT, V. N. Statistonnuy v zamerzayushchikh moryakh [prichiny i rasprostraneniye] [Stationary polynyas in seas which freeze (causes and distribution)]. Vestnik Leningradskogo Universiteta, No. 12, Seriya Geologii i Geografii, Vyp. 2 [Messenger of Leningrad University, No. 12, Geology and Geography Series, Vyp. 2], 1958, p. 172-83. [Position of known and surmised polynyas in Arctic and Antarctic waters; wind action thought to be controlling factor. English summary.]


SUNDBERG-FALKENMARK, M. Studies on lake-ice movements. Union Géodésique ..., Toronto, 1957, Tom. 4, 1958, p. 266-78. [Movements of ice on Lake Liten, Sweden, attributed to freezing of water in cracks developed near shore.]

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TRÖNING, M. V. Vostrap syazii mezhdu klimatom i dekamenjem [Questions of the link between climate and glaciation]. Tomsk, Izdatel'stvo Tomskogo Universiteta [Publishing House of Tomsk University], 1956, 202 p. [Factors controlling position of snow line.]
FROST ACTION ON ROCKS AND SOIL. FROZEN GROUND. PERMAFROST


Dostovalov, B. N. Tetragonal'nyye sistemy ledyanykh zhil [Tetragonal systems of ice veins]. Union Geodésique... 

FITZPATRICK, E. A. An introduction to the periglacial geomorphology of Scotland. Scottish Geographical Magazine, Vol. 74, No. 1, 1958, p. 28-36. [Soil and land form features, causes; fossil and present day phenomena.]

Henn, S. Etude sur le gel du sol. Union Geodésique... 


POTTER, J. C. Mean duration and accumulation of snow cover in Canada. *Union Géodésique...* Toronto, 1957, Vol. 4, 1958, p. 82-87. [Data over 15 years used to give general pattern of snow cover distribution in Canada. Includes charts of date of first and last snow cover, mean depth of cover.]

QUERVAIN, M. R. De. On metamorphism and hardening of snow under constant pressure and temperature gradient. *Union Géodésique...* Toronto, 1957, Vol. 4, 1958, p. 225-39. [Laboratory experiments used to show effect of pressure and temperature gradient on changes in density, strength and crystal form.]


RAKHMANOV, V. V. Forest-cover effects on snowpack accumulation and snow melting in relation to meteorological conditions. *Union Géodésique...* Toronto, 1957, Vol. 4, 1958, p. 210-21. [Comparison of water equivalent of snow cover in forests and in open country and factors affecting difference.]


WILLIAMS, G. P. Variability of physical characteristics of snow cover across Canada. *Union Géodésique...* Toronto, 1957, Vol. 4, 1958, p. 158-65. [Results showing probability of values of density, hardness, and grain size of snow cover for stations throughout Canada.]
