GLACIOLOGICAL LITERATURE

THIS bi-annual list of glaciological literature aims to cover the *scientific* aspects of snow and ice in all parts of the world. Attention is drawn to the bibliographies in each number of *The Polar Record* (Cambridge), which aim to cover the significant work dealing with expeditions, research, equipment and conditions of living in the Polar regions. Both journals, however, deal with Polar literature having specific glaciological interest and with general matters of a practical nature such as snowcraft.

ANDERSON, ALFRED B. C., and others. Soil-moisture conditions and phenomena in frozen soils. By Alfred B. C. Anderson, Joel E. Fletcher and N. E. Edlefsen. *Transactions American Geophysical Union*, 1942, Part 2, pp. 356–71, diagrs. [Experimental methods of measuring the temperature at which soil-moisture freezes; movement of soil-moisture in relation to freezing phenomena in soils.]

BADEN-POWELL, D. F. W. Long-distance Correlation of Boulder Clays. *Nature*, Vol. 161, No. 4086, 1948, pp. 287–88. [Preliminary report on direction of ice movement in East Anglia and the correlation of Eastern and Midland boulder clays.]

BELL, A. E. Theory of Skating. *Nature*, Vol. 161, No. 4089, 1948, pp. 391–92. [Based on Bowden and Hughes' work, the conclusion is drawn that the skate makes its track by plastic deformation of the ice rather than by melting.]

BERNARD, MERRILL and WILSON, WALTER T. A new technique for the determination of heat necessary to melt snow. *Transactions American Geophysical Union*, 1941, Part 1(B), pp. 178–81, illus., tab. [Description.]

BROOKS, C. F. and HOWELL, W. E. Harvard–Mt. Washington icing researches 1946–47. *Mount Washington Observatory News Bulletin* (Gorham), No. 16, 1948, pp. 3–4. [Observational and experimental work; physical and synoptic studies; statistical investigation.]

BUCHER, WALTER H. The importance of the Ross Shelf-ice to structural geology. *Transactions American Geophysical Union*, 1942, Part 2, pp. 697–99. [The Ross Shelf-ice considered as a suitable area for the study of the behaviour of relatively thin plates of crystalline material subject to stress under conditions which permit a certain amount of plastic yielding.]

CAILLEUX, ANDRÉ. Répartition en altitude des aspects du sol liés au froid. *Compte Rendu Sommaire des Séances, Société Géologique de France*, No. 5, 1948, pp. 92–93.

CHAMPION, DONALD L. Weather and Railway Operation in Britain. *Weather*, Vol. 2, No. 12, 1947, pp. 373–80. [Describes, *inter alia*, the effects of frost and snow (with illustrations) on British railway traffic.]

COCHEMÉ, JACQUES. Note on Some Cases of Aircraft Icing. *Meteorological Magazine*, Vol. 77, No. 908, pp. 33–38. [Includes a table of conditions which induce icing including cloud type, height, pressure, temperature, air speed, type of particle, type of icing and rate of icing.]

CONNOR, A. J. Snowfall-maps of Canada, *Proceedings Central Snow-Conference*, Vol. 1, 1941, pp. 153–59a.

CRIDDLE, WAYNE D. Value of Midwinter Snow Surveys. *Transactions American Geophysical Union*, Vol. 28, No. 6, 1947, pp. 888–98. [Suggests that a forecast based on the maximum winter value of the snow cover may be superior to one based on the value observed on the same date each year.]

DUCKER, P. H. Winter transportation in the High Sierras by "sno-motor." *Transactions American Geophysical Union*, 1942, Part 1(B), pp. 161–63. [Description of crawler-type "sno-motor."]

FIELD, WILLIAM O., Jr. A gazetteer of Alaskan glaciers, *Transactions American Geophysical Union*, 1941, Part 3, pp. 796–99. [Gazetteer being compiled as one of the current (1941) projects of the American Geographical Society in co-ordination with the programme of the Committee on Glaciers of the American Geophysical Union and the International Commission on Snow and Glaciers.]

FLINT, RICHARD FOSTER. Origin of the former North American ice sheet. *Geographical Review*, Vol. 33, No. 3, 1943, pp. 478–81.

FLINT, RICHARD FOSTER and DORSEY, HERBERT G. (Jr.). Iowan and Tazewell Drifts and the North American Ice Sheet. *American Journal of Science*, Vol. 243, Nov. 1945, pp. 627–36. [Suggests that although the Iowan drift is much older than the Tazewell, both were deposited by "a single Laurentide Ice Sheet."]

GARDNER, ROBERT. Some effect of freezing and thawing on the aggregation and permeability of dispersed soils. *Soil Science*, Vol. 60, 1945, pp. 437–43. [Abstract in *Chemical Abstracts*, 1946, p. 2565.]

GERDEL, R. W. The dynamics of liquid water in deep snow-pack. *Transactions American Geophysical Union* Vol. 26, Part 1, 1945, pp. 83–90, tables, diagrams. [Determination of liquid water-content of snow-pack.]

GOGUEL, J. Sur quelques cuvettes de vallées glaciaires dépourvues de verrous rocheux. *Annales de Géographie*, No. 300, 1946, pp. 241–46, illustrations, maps. [Author seeks reason for alluvial plains in glacial valleys where no rock barrier caused their formation; three examples in France described.]

GRØNLIE, OLE T. On the traces of the ice ages in Nordland, Troms, and the south-western part of Finnmark in northern Norway. *Norsk Geologisk Tidsskrift*, Bd. 20, Hefte 1–2, 1940, pp. 1–70, illustrations, maps, diagrams. [The Pleistocene glaciation in northern Norway; late glacial shore lines; calculation of the ratio between the depth of a depression caused by the weight of an ice sheet and the thickness of the ice. Norwegian Summary.]

HORTON, ROBERT E. The role of snow, ice and frost in the hydrologic cycle. *Proceedings Central Snow-Conference*, Vol. 1, 1941, pp. 5–21.

JENSEN, A. D. S. Two new West Greenland localities for deposits from the Ice Age and the post-glacial warm period. *K. Danske Videnskabernes Selskab. Biologiske Meddelelser*, Bd. 17, Nr. 4, 1942, 35 p.

JUNGEL, H. Schneeräummaschinen. *Winterdienst auf Strassen und Reichsautobahnen* (Berlin), Bd. 31, 1941, pp. 84–104. [A well-illustrated description of snow-ploughs of several countries and of many types.]

KUHN, W. Der Firnzuwachs pro 1946–47 in einigen schweizerischen Firngebieten. XXXIV. Bericht. *Vierteljahrsschrift der Naturforschenden Gesellschaft* (Zürich), Bd. 92, 1947, pp. 269–73. [The whole series of these works since 1918 on the firn regime of some Swiss glaciers, of which the above is the latest published, is now in the possession of the British Glaciological Society.]

LEIGHLY, J. Cuspate surfaces of Melting Ice and Firn. *Geographical Review*, Vol. 38, 1948, pp. 301–06. [Cellular convection hypothesis of the origin of these surface forms of melting ice.]

LEWIS, GILBERT N. Thermodynamics of an Ice Age: The Cause and Sequence of Glaciation. *Science*, Vol. 104, No. 2690, 1946, pp. 43–47. [When climatic fluctuation exceeds a certain magnitude glaciation may proceed automatically.]

LEWIS, LILLIAN F. Snow-cover in the British Isles in January and February of the se[v] re winters of 1940, 1941 and 1942. *Quarterly Journal Royal Meteorological Society*, Vol. 69, pp. 215–19, 286–88.

LOGAN, RICHARD F. Glacial border drainage and lobe-edge embankments. *American Journal of Science*, Vol. 243, 1945, p. 9–16.

LYSGAARD, L. Recent Climatic Fluctuations. *Nature*, Vol. 161, No. 4090, 1948, pp. 442–43. [In recent years in temperate and arctic zones temperatures have increased while in tropical and subtropical regions they have decreased. An increase in rainfall has taken place in temperate and arctic zones and over Asiatic monsoon regions with a decrease in tropical and subtropical areas.]

MARDLES, E. W. Rheology of Minerals. *Nature*, Vol. 160, No. 4076, 1947, pp. 844–45. [Reference to preferred orientation of minerals and the mechanism of rock and glacier flow.]

MATTHES, FRANÇOIS E. Moraines with Ice Cores in the Sierra Nevada. *Sierra Club Bulletin*, Vol. 33, 1948, pp. 87–96. [Discusses the existence and origin of large masses of ice incorporated in moraines to remain preserved for centuries.]

NILSSON, E. Den nutida klimatföröndringen i Ostafrika. *Ymer* (Stockholm), 1947, pp. 161–72. [A discussion of the pluvial epochs in East Africa in relation to glaciation of the mountains Kilimanjaro, Kenya and Ruwenzori.]

OBRUCHEV, V. A. 15-letie merzlotovedeniya v Akademii Nauk S.S.S.R. [15th anniversary of the study of permanently frozen soil in the Academy of Sciences of the U.S.S.R]. *Priroda* [*Nature*], No. 5, 1946, pp. 92–94. [Development of V. A. Obruchev Institute for the Study of Permanently Frozen Soil and its predecessors, 1932–46; their problems and results. Copy in Science Museum Library.]

PANOV, D. G. On the origin and periodicity in the Glaciations of the Earth. *Comptes Rendus (Doklady) de l'Académie des Sciences de l'U.S.S.R*, Vol. 51, No. 5, 1946, pp. 389–91. [Glaciations due to a combination of cosmic agents leading to changes in quality of solar radiation and of physical geographical factors determining the geographical distribution of glacierizations.]

PERUTZ, M. F. Glaciers. *Science News* (Penguin Books, London), No. 6, 1948, pp. 105–27. [Detailed account of the development and present-day state of glacier physics, with a section on glacial climate.]

RICHTER, HANS. Photogrammetrische Eisbeobachtung und Eismessung. *Polarforschung*, Bd. 2, Heft 1/2, 1946, pp. 94–97 (published in Jan. 1948). [Possibilities of photogrammetric survey of sea ice and glaciers; suggests suitable methods.]

SAIN, KANWAR. Part played by glaciers and snow in the hydrology of Punjab rivers. *Journal Central Board of Irrigation, India*, October 1945, p. 195–99.

SEGRE, A. G. Suoli e strutture da nivazione nell' Appennino Centrale. *L'Universo* (Firenze), Anno 27, N.6, 1947, pp. 805–14. [A comparative study of Alps and Appenines in regard to polygonal soil structures within the limits of the observations.]

SHANNON, W. L. Prediction of frost penetration. *Civil Engineering* (London), Vol. 41, 1946, p. 228.

SCHMIDT, VICTOR E. Boulders of interglacial conglomerate in Central New York. *American Journal Science*, Vol. 245, No. 2, 1947, pp. 127–33. [Stream-rounded pebbles, cobbles and boulders of firmly cemented conglomerate containing erratic pebbles recently discovered in deposits of glacial gravel in central New York furnish evidence of multiple glaciation of the region which corroborates that from other sources.]

SPINK, P. C. World-wide climate and the glaciers and lake levels of East Africa. *Weather*, Vol. 2, 1947, pp. 329–37.

STONE, ROBERT G. The average length of the season with snow-cover of various depths in New England. *Transactions American Geophysical Union*, 1944, Part 6, pp. 874–81, maps. [Maps and explanatory text; comments by Henry I. Baldwin, p. 881.]

TABER, STEPHEN. Perenially frozen ground in Alaska; its origin and history. *Bulletin Geological Society America*, Vol. 54, 1943, pp. 1433–1548. [Discusses silt deposits of Alaska in addition to ground ice and other cold climate geological phenomena; 18 deductions and conclusions regarding the origin of ground ice are listed.]

THORARINSSON, SIGURDUR and SIGURDSSON, STEINTHÓR. Volcano-Glaciological investigations in Iceland during the last decade. *Polar Record*, Vol. 5, Nos. 33/34, 1947, pp. 60–66, illustrations. [List of expeditions to the Grimsvötn and Katla areas with short notes on scientific results and glacier fluctuation in Iceland.]

TROLL, CARL. *Büsserschnee in den Hochgebirgen der Erde*. Gotha: Justus Perthes, 1942, 103 pp., illustrations, maps, diagrams. [Comparative climatological analysis of *nieve penitente* in both hemispheres based on snow cover, nature of glaciers, frost effects, etc.]

TROLL, CARL. Neue Gletscherforschungen in den Subtropen der alten und neuen Welt. *Zeitschrift der Gesellschaft für Erdkunde zu Berlin*, Heft 1/2, 1942, pp. 54–65. [Rapid advance of the upper layers of glaciers with consequent outbreaks of ice-dammed lakes in the Karakoram (K. Mason) and Argentine (Helbling).]

TROLL, CARL. Die Frostwechselhäufigkeit in den Luft- und Bodenklimaten der Erde. *Meteorologische Zeitschrift*, Bd. 60, 1943, pp. 161–71. [Frequency of freezing and thawing in the different frost climates of the world, especially in south Peru and in the sub-antarctic islands, and its physiographic effect.]

WENTWORTH, C. K. Ablation of snow under the vertical sun in Hawaii. *American Journal of Science*, Vol. 238, February 1940, pp. 112–16. [Deeply pitted and spiked snow-banks in the summit area of Mauna Kea.]

WHITE, SIDNEY E. Two tills and the development of glacial drainage in the vicinity of Stafford Springs, Connecticut. *American Journal of Science*, Vol. 245, 1947, pp. 754–78.

WILM, H. G. The effect of timber cutting in a lodgepole-pine forest on the storage and melting of snow. *Transactions American Geophysical Union*, 1944, Part 1, pp. 153–55. [Results of experiments by the Rocky Mountain Forest and Range Experiment Station in Colorado.]

WILSON, WALTER T. Some observations of the thermal quality of snow. *Transactions American Geophysical Union*, 1942, Part 2, pp. 553–56, diagrams. [Results of about 300 determinations of snow-quality in Utah and Wyoming, April–May 1941; comments by Carroll F. Merriam, p. 556.]

WILSON, WALTER T. An outline of the thermodynamics of snow-melt. *Transactions American Geophysical Union*, 1941, Part 1(B), pp. 182–95. [Theoretical melting at a point; sources of moisture made available as the snow melts; the effect of mechanical forces; areal significance of melting rates.]

WING, LEONARD. Freezing and thawing dates of lakes and rivers as phenological indicators. *Monthly Weather Review*, Vol. 71, 1943, pp. 149–58.

WOLD, JOHN S. Interglacial consequent valleys of Central New York. *American Journal Science*, Vol. 240, 1942, pp. 617–26. [Description of unique consequent valleys on the glacially oversteepened walls of New York valleys and their presentation as a further criterion of multiple glaciation in that area.]

WORK, R. A. and others. A lateral snow-sampler. [By] R. A. Work, R. W. Childreth and W. T. Frost. *Transactions American Geophysical Union*, 1944, Part 1, pp. 122–23, illustrations. [Short description.]

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